
[Tissue Helminthoses.] [Article in Czech]

Kolarova L. Institute for Postgraduate Medical Education, Prague, Czech Republic.

Helminthic infections affecting host organs/tissues belong to the most important parasitic infections. In the Czech Republic, an increase in the travelers to and immigrants from endemic countries has been noted. Except for larval toxocarosis, however, the total number of patients with schistosomiasis, hydatid disease, cysticercosis and filariases does not exceed 15 cases per year till present. It remains to be solved whether this situation reflects manners of a Czech tourist in endemic areas or the diseases are neglected during routine practice. The presented paper, therefore, focuses on some diagnostically important features accompanying helminthic infections. And, clinical symptoms and signs of the infections are analysed in relation to the patient history and laboratory findings. Key words: organ/tissue helminthoses, diagnosis, Czech Republic. PMID: 16958016 [PubMed - as supplied by publisher]

2. Vet Parasitol. 2006 Sep 4; [Epub ahead of print] Related Articles, Links

Risk factors associated with porcine cysticercosis in selected districts of Eastern and Southern provinces of Zambia.

Sikasunge, C.S., Phiri, I.K., Phiri, A.M, Dorny, P., Siziya, S., Willingham, A. L.,3rd. School of Veterinary Medicine, University of Zambia, P.O. Box 32379, Lusaka, Zambia.

To determine the risk factors associated with Taenia solium transmission in humans and pigs in the rural areas of Eastern and Southern provinces of Zambia, a questionnaire was administered in 788 households from 155 villages. Pigs were examined from 800 households. Tongue examination and enzyme-linked immunosorbent assay (Ag-ELISA) for the detection of circulating antigens of T. solium cysticerci were used to measure infection in pigs. A snowballing technique was utilised to select households with pigs. Prevalence of households with pigs infected with T. solium on tongue examination by district ranged from 12.7% to 32.1% with Ag-ELISA having a range of 30.0-51.7%. Of the total number of households visited, 18.8% and 37.6% had at least one pig positive for porcine cysticercosis on tongue examination and Ag-ELISA, respectively. Risk factors associated with T. solium infection were lack of pork inspection at slaughter (96.7%), consumption of pork with cysts (20.1%), selling of pork infected with T. solium cysticerci (18.3%), free-range husbandry system (83.2%) and absence of latrines (58.0). Free-range husbandry system (OR=1.68; 95% CI=1.36-2.07) was a
significant risk factor for porcine cysticercosis in the surveyed areas. The result that pigs were mostly kept on free-range and semi-intensive husbandry systems may have permitted them to have access to eating human faeces that could be contaminated with tapeworm eggs. This study has shown that T. solium infection poses a high public health risk in the study areas and urban areas as well. We recommend that a human survey be conducted to verify the human exposure to taeniasis and/or cysticercosis in Zambia.

PMID: 16956727 [PubMed - as supplied by publisher]

3. Parasitology. 2006 Sep 4;:1-5 [Epub ahead of print] Related Articles, Links

Further evaluation of the synthetic peptide vaccine S3Pvac against Taenia solium cysticercosis in pigs in an endemic town of Mexico.


Taenia solium cysticercosis is a parasitic disease frequently affecting human health and the pig industry in many developing countries. A synthetic peptide vaccine (designated S3Pvac) against porcine cysticercosis has been developed previously as an aid to interrupt transmission and has been shown to be effective. The results of the present study support the effectiveness of the vaccine under endemic field conditions. However, given the time-frame of the vaccination trial, no changes in the local levels of transmission were detectable before and after vaccination using sentinel pigs. Thus, this investigation shows the limited usefulness of single vaccination as the sole means of interrupting Taenia solium transmission in an endemic region.

PMID: 16948875 [PubMed - as supplied by publisher]


[Management of teniasis: comparative evaluation of osmotic non-oily purgatives] [Article in Romanian]

Lazar L, Cristian-Davidescu, A. UMF Carol Davila Bucuresti.
The therapeutic protocol in teniasis associates a tenicidal drug and a pro-expulsive purgative. The purgative impeds intestinal disaggregation of the worm, facilitating the identification of the species of Taenia and preventing the risk of cysticercosis in case of T. solium infection. AIM: Comparative evaluation of the efficacy of two non-oily purgatives (magnesia usta MU and a lactulose derivative DL) using as anti-parasitic drug exclusively Praziquantel (PZQ), in order to modernise the treatment of human teniases. RESULTS: Regardless the purgative used, cestode shedding rate was of 100% fractionated, with easy to identify proglotes, but with seldom recognizable scolex. Expulsion is rapid, up to 3 hours with DL and maximum 6 hours for MU, being perceived as uncomfortable, but without major intolerance. Egg shedding following expulsion may be prolonged up to 48 hours, with a significant risk for the patient and the community if T. solium infection. The onset of non-specific post-teniasis enterocolopatia was signalled as possible functional sequel. CONCLUSION: The treatment formula for teniasis with PZQ and an non-oily purgative (preferably DL, yet also MU as cheaper option) ensures rapid and safe expulsion of the worm, allowing meanwhile the morphological diagnostic of species. Controlled expulsion of the taenia demands specialised surveillance in hospital.

PMID: 16938938 [PubMed - in process]

5. J Assoc Physicians India. 2006 May;54:366-70

A clinico-serological study of neurocysticercosis in patients with ring enhancing lesions in CT scan of brain.

Kotokey RK, Lynrah KG, De A. Department of Medicine, Assam Medical College and Hospital, Dibrugarh.

AIMS OF THE STUDY: To study the clinical profile of neurocysticercosis and the utility of serological test using enzyme linked immunosorbent assay (ELISA) in patients with ring enhancing lesions in CT scan of brain. METHODS: A total of 51 patients presenting between April 2003 to March 2004 to the Assam Medical College and Hospital, Dibrugarh, with ring enhancing lesions in CT scan of brain suggestive of neurocysticercosis were included in the study. Serum samples for ELISA test were taken from all patients and controlled sera were taken from 20 patients admitted in the ward, who did not have clinical evidence of cysticercosis and whose CT scan of brain were either normal or revealed lesion other than cerebral cysticercosis. RESULTS: The maximum incidence of neurocysticercosis was found in the age group between 21 and 30 years (43.41%). Seizures were the commonest clinical presentation (100%). Eleven patients (21.56%) had ring enhancing lesions with central scolex. Forty patients (78.44%) showed only ring enhancing lesions. ELISA test for definitive neurocysticercosis showed a sensitivity of 82.60% and specificity of 100%, while patients with CT scan features of
neurocysticercosis had a sensitivity of 78.43% with ELISA. CONCLUSION: ELISA for cysticercosis showed a sensitivity of 82.60% and specificity of 100%. The study also shows that therapeutic effectiveness with albendazole is quite satisfactory. As the study population is small in number which was conducted in a span of one year, an evaluation with a larger number of patients will definitely throw more light on the subject.

PMID: 16909732 [PubMed - in process]


Intraperitoneal rupture of cysticercosal cyst mimicking appendicular perforation.

Singh, R.B., Pavithran, N.M., Bakshi, N. Department of General Surgery Pt. BD Sharma PGIMS, Rohtak, Haryana, India.

Anaphylaxis following intraperitoneal rupture of a cysticercosal cyst mimicking pelvic peritonitis secondary to appendicular perforation is reported. Human cysticercosis occurs following ingestion of Taenia solium eggs, usually from faecally contaminated food. A case of pelvic cysticercosis presenting with signs and symptoms of anaphylaxis and peritonitis is reported, with plausible explanations for this unusual presentation.

PMID: 16884633 [PubMed - in process]


Co-agglutination test for cysticercus antigen detection in the serum for the diagnosis of cysticercosis.

Parija, S.C., Rajesh Reddy, S. Department of Microbiology, Jawaharlal Institute of Postgraduate Medical Education & Research, Pondicherry, India.

parijasc@vsnl.com

The objective of the study was to develop the co-agglutination (Co-A) test, a rapid slide agglutination test for the diagnosis of cysticercosis. The present study included 21 cases of cysticercosis, which comprised seven cases of clinico-radiologically definite cases of neurocysticercosis (NCC) proven with either computed tomography (CT) scan or magnetic resonance imaging (MRI), eight cases of clinically strong NCC, six cases of extraneural cysticercosis in muscle and eye; 40 non-cysticercal parasitic infection controls; and 20 healthy controls. Hyperimmune cysticercus antiserum was raised in rabbits and was used to coat Staphylococcus aureus (Cowan strain-I) bearing protein A (SAPA) cells, and the
Co-A was standardized to detect cysticercal antigen in the serum. Serum samples from 12 out of 21 (57%) cases of cysticercosis were positive for cysticercal antigen by the Co-A test. Of the 12 positive samples, eight were from cases of neurocysticercosis and four from cases of extra-neural cysticercosis. Serum samples from seven out of 40 non-cysticercal parasitic infection controls and serum samples from one out of 20 (5%) healthy controls showed a false-positive reaction for the antigen by the Co-A test. There was a statistically significant difference between the antigen detection rates among cysticercosis patients on one hand, and the patients with other parasitic diseases (P = 0.0014), and healthy controls (P=0.0003) on the other. The Co-A test appears to be a moderately sensitive and specific test for the diagnosis of cysticercosis.

PMID: 16884616 [PubMed - in process]

8.

Intrahepatic DNA vaccination: unexpected increased resistance against murine cysticercosis induced by non-specific enhanced immunity.


Experimental murine cysticercosis caused by Taenia crassiceps has proved to be a useful model with which to test the efficacy of new vaccine candidates and delivery systems against pig cysticercosis. A high level of protection against murine cysticercosis was previously observed by intramuscular or intradermal DNA immunization with the use of the sequence of the recombinant KETc7 antigen cloned in pcDNA3 (pTc-sp7). To determine the effect of KETc7 differential expression in DNA vaccination, KETc7 was cloned in pGEM 11Zf(+) under the control of the tissue-specific regulatory promoter phosphoenolpyruvate carboxykinase (pPc-sp7). A high level of protection was induced by intrahepatic immunization with pPc-sp7, pTc-sp7 and the empty vector in the absence of any specific immunity. The empty vector pGEM 11Zf(+), the plasmid with the highest content of CpG sequences, provided to the most efficient protection. This protection was related to an increased number of splenocytes, enhanced nonspecific splenocyte proliferation, and intensified intrahepatic INF-gamma production. Overall, intrahepatic plasmid CpG-DNA immunization provokes an exacerbated nonspecific immune response that can effectively control Taenia crassiceps cysticercosis.

PMID: 16884018 [PubMed - indexed for MEDLINE]

Identification and characterization of a cathepsin L-like cysteine protease from Taenia solium metacestode.

Li AH., Moon, S.U., Park, Y.K., Na, B.K., Hwang, M.G., Oh CM, Cho S.H., Kong, Y, Kim, T.S, Chung, P.R. Division of Malaria and Parasitic Diseases, National Institute of Health, Korea Centers for Disease Control and Prevention, Seoul 122-701, Republic of Korea; State Key Laboratory of Freshwater Ecology and Biotechnology, Institute of Hydrobiology, Chinese Academy of Sciences, Wuhan 430072, China.

Taenia solium metacestode, a larval pork tapeworm, is a causative agent of neurocysticercosis, one of the most common parasitic diseases in the human central nervous system. In this study, we identified a cDNA encoding for a cathepsin L-like cysteine protease from the T. solium metacestode (TsCL-1) and characterized the biochemical properties of the recombinant enzyme. The cloned cDNA of 1216bp encoded 339 amino acids with an approximate molecular weight of 37.6kDa which containing a typical signal peptide sequence (17 amino acids), a pro-domain (106 amino acids), and a mature domain (216 amino acids). Sequence alignments of TsCL-1 showed low sequence similarity of 27.3-44.6 to cathepsin L-like cysteine proteases from other helminth parasites, but the similarity was increased to 35.9-55.0 when compared to mature domains. The bacterially expressed recombinant protein (rTsCL-1) did not show enzyme activity; however, the rTsCL-1 expressed in Pichia pastoris showed typical biochemical characteristics of cysteine proteases. It degraded human immunoglobulin G (IgG) and bovine serum albumin (BSA), but not collagen. Western blot analysis of the rTsCL-1 showed antigenicity against the sera from patients with cysticercosis, sparganosis or fascioliasis, but weak or no antigenicity against the sera from patients with paragonimiasis or clonorchiasis.

PMID: 16872751 [PubMed - as supplied by publisher]

Cysteine proteinase inhibitors in murine cysticercosis.

Baig, S., Damian, R.T., Morales-Montor, J., Thazhath, R., Ghaleb, A., Welch, M., Talhouk, J, White, A.C. Jr. Department of Cellular Biology, University of Georgia, Athens, Georgia 30603, USA.

We explored the prophylactic efficacies of two novel protease inhibitors in murine cysticercosis. Our results demonstrated a 95% and 80% reduction in parasite burden for mice injected with Z-LLL-FMK and Z-LLY-FMK, respectively. Further studies are merited on the role of cysteine proteinase inhibitors in treatment of cysticercosis.

PMID: 16870795 [PubMed - in process]

12. Mem Inst Oswaldo Cruz. 2006 May;101(3):335-7 Related Articles, Links

Notes on human cases of cystic echinococcosis in Peru.


Cystic echinococcosis (CE) is a high prevalent zoonosis in the central and southern Peruvian Andes. Serum samples (n50) from patients presenting presumptive clinical and radiological diagnosis of CE (group 1), were tested for antibodies against Echinococcus granulosus metacestode using Arc-5 double diffusion assay (DD5), immunoelectrophoresis (IEF), and immunoelectrotransfer blot (EITB) techniques. Serum samples (n18) from patients presenting other parasite infections (paragonomiasis, cysticercosis, and fascioliasis) or healthy blood donors (n15), were designated as control groups. The overall sensitivity of the tests was of 94% (DD5 and IEF tests) or 96% (EITB test). Only patients from group 1 were seropositive for CE. Polypeptides of 21, 31, and 48 kDa were considered positive for CE. Based on these results, this study demonstrates that CE also occurs in other coastal departments (Piura, Ancash, Ica, Arequipa, and Tacna) besides Lima.

PMID: 16862333 [PubMed - indexed for MEDLINE]


Biochemical characterization of annexin B1 from Cysticercus cellulosae.
Annexin B1 from Cysticercus cellulosae has recently been identified using immunological screening in an attempt to find novel antigens for vaccine development against cysticercosis. The protein possesses anticoagulant activity and carries significant therapeutic potential due to its thrombus-targeting and thrombolytic properties. We investigated the biochemical properties of annexin B1 using liposome and heparin Sepharose copelleting assays, as well as CD spectroscopy. The calcium-dependent binding to acidic phospholipid membranes is reminiscent of other mammalian annexins with a clear preference for high phosphatidylserine content. A unique property of annexin B1 is its ability to bind to liposomes with high phosphatidylserine content in the absence of calcium, which might be due to the presence of several basic residues on the convex protein surface that harbours the membrane-binding loops. Annexin B1 demonstrates lectin properties and binds to heparin Sepharose in a cooperative, calcium-dependent manner. Although this binding is reversible to a large extent, a small fraction of the protein remains bound to the glycosaminoglycan even in the presence of high concentrations of EDTA. Analogous to annexin A5, we propose a model of heparin wrapped around the protein thereby engaging in calcium-dependent and calcium-independent interactions. Although the calcium-independent heparin-binding sites identified in annexin A5 are not conserved, we hypothesize three possible sites in annexin B1. Results from CD spectroscopy and thermal denaturation indicate that, in solution, the protein binds calcium with a low affinity that leads to a slight increase in folding stability.

PMID: 16857011 [PubMed - in process]

14.

Meta-analysis: Cysticidal drugs for neurocysticercosis: albendazole and praziquantel.

Del Brutto, O.H., Roos, K.L., Coffey, C.S., García, H.H. Hospital-Clinica-Kennedy, Guayaquil, Ecuador. odb@gye.satnet.net

BACKGROUND: Conflicting reports have caused controversy on whether cysticidal drugs modify the natural course of neurocysticercosis. PURPOSE: To perform a meta-analysis of randomized trials assessing the effect of cysticidal drugs on neuroimaging and clinical outcomes of patients with neurocysticercosis. DATA SOURCES: Search of MEDLINE, Cochrane Database of Systematic Reviews, and Literatura Latino-Americana y del Caribe en Ciencias de la Salud (LILACS) between 1979 and 2005. There were no language restrictions. STUDY SELECTION: Randomized trials of cysticidal drug therapy for neurocysticercosis that met predefined criteria designed to allow characterization of the disease and
objective evaluation of therapy. The authors independently reviewed articles. Abstracted data included study design, number of randomly assigned patients and withdrawals, intervention, adverse events, timing of neuroimaging studies, and outcomes. DATA SYNTHESIS: Eleven studies met the inclusion criteria. Six trials randomly assigned 464 patients with cystic lesions (vesicular cysticerci), and 5 trials randomly assigned 478 patients with enhancing lesions (colloidal cysticerci). Parasites were located in the brain parenchyma or subarachnoid space at the convexity of the cerebral hemispheres. Cysticidal drug therapy was associated with complete resolution of cystic lesions (44% vs. 19%; \( P = 0.025 \)). Trials on enhancing lesions showed a trend toward lesion resolution favoring the use of cysticidal drugs (72% vs. 63%; \( P = 0.38 \)) that became statistically significant when an outlier trial was excluded from the analysis (69% vs. 55%; \( P = 0.006 \)). Risk for seizure recurrence was lower after cysticidal treatment in patients with enhancing lesions (14% vs. 37%; \( P < 0.001 \)). The single trial evaluating the frequency of seizures in patients with cystic lesions showed a 67% reduction in the rate of generalized seizures with treatment (\( P = 0.006 \)). LIMITATIONS: Not all studies focused on the control of seizures as an outcome. CONCLUSIONS: Cysticidal drug therapy results in better resolution of colloidal and vesicular cysticerci, lower risk for recurrence of seizures in patients with colloidal cysticerci, and a reduction in the rate of generalized seizures in patients with vesicular cysticerci.

PMID: 16818928 [PubMed - indexed for MEDLINE]

15.
Vet Parasitol. 2006 Jun 23; [Epub ahead of print]   Related Articles, Links

Evaluation of the ELISA test for the antibody detection in cattle naturally and experimentally infected with Cysticercus bovis.

Monteiro, L.L., Pinto, P.S., Dias, F.S.  Department of Veterinary, Vicosa Federal University, 36570-000 Vicosa, MG, Brazil.

The ELISA test was evaluated for the diagnosis of bovine cysticercosis using heterologous antigens from the larvae of T. solium and T. crassiceps, by using different types of positive and negative control sera, to allow a broader analysis of the results. The ELISA test showed low sensitivity under natural conditions of bovine cysticercosis manifestation, but high rates (up to 90%) under experimental conditions. The high specificity of the test (81-100%) made evident its capacity to differentiate cysticercosis from other bovine diseases. No difference in performance was found among the antigens studied. It was concluded that the ELISA test has deficiencies in detecting anti-cysticercosis antibodies of animals at slaughterhouse. However, it can be useful in detecting experimentally infected animals and differentiating cysticercosis from other bovine diseases.

PMID: 16806711 [PubMed - as supplied by publisher]
Simultaneous ocular and systemic cysticercosis and tuberculosis.

Rani, A., Pushker, N., Kulkarni, A., Oculoplastic and Pediatric Ophthalmology Services, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110 029, India, msbajaj32@hotmail.com.

Human cysticercosis and tuberculosis are endemic diseases in developing countries. Both these diseases have certain common factors of origin. We would like to present the co-existence of these infections in a 20-year-old female. She was a known case of pulmonary and ocular tuberculosis and she acquired cysticercosis of the eye and brain.

PMID: 16804662 [PubMed - in process]

Safety and efficacy of clobazam versus phenytoin-sodium in the antiepileptic drug treatment of solitary cysticercus granulomas.

Kaushal S, Rani A, Chopra SC, Singh G. Department of Neurology, Dayanand Medical College, Ludhiana, Punjab, India. gagandeep_si@yahoo.co.uk

Background: It is now agreed that the prognosis of seizure disorder due to solitary cysticercus granuloma (SCG) is generally good. However, the choice antiepileptic drugs (AEDs) remain empirical, with no comparative trials of different AEDs being available. AIMS: To determine the safety and efficacy (measured by the incidence of 'treatment failure') of clobazam in comparison to standard treatment with phenytoin-sodium for prevention of seizures in persons with solitary cysticercus granulomas (SCGs). SETTINGS AND DESIGN: This pilot study was conducted in a neurology department of a medical college hospital in the form of a prospective, randomized, open-labeled trial. MATERIALS AND METHODS: Forty-eight patients with seizures due to SCG were randomized in an open-labeled trial to either, clobazam (1 mg/kg oral loading followed by 0.5 mg/kg/d) (n=21) or phenytoin (15 mg/kg, oral loading in 3 divided doses over 24 h, followed by 5 mg/kg/d) (n=27). They were followed over 6 months with the primary outcome measure being treatment failure (either discontinuation or modification of AEDs) due to either adverse effects or breakthrough seizures. RESULTS: Treatment failures were noted to be significantly less common (P =0.03) in the clobazam-treated group (n=1; 4.7%) than in phenytoin-treated group (n=9; 33.3%). These included one patient (4.7%) in the clobazam-group who had breakthrough seizures and 3
(11.1%) who had breakthrough seizures and 6 (22.2%) in the phenytoin-treated
group who had adverse effects requiring treatment discontinuation.

CONCLUSIONS: Clobazam was well tolerated, safe and more effective than
phenytoin in the AED treatment of patients with SCG.

PMID: 16804259 [PubMed - indexed for MEDLINE]

18.
Neurol India. 2006 Jun;54(2):141-2. Related Articles, Links

Seizures associated with solitary cysticercus granuloma: antiepileptic drugs for
how long?

Murthy J.

PMID: 16804255 [PubMed - indexed for MEDLINE]

19.

Simultaneous intraocular and bilateral extraocular muscle involvement in a case of
disseminated cysticercosis.

Chadha V, Pandey PK, Chauhan D, Das S. Guru Nanak Eye Centre, New Delhi, India.

We report an unusual case of disseminated cysticercosis having simultaneous
intraocular and extraocular involvement. This 21-year-old male presented with
recent loss of vision in one eye and history of a single seizure. Examination
revealed intravitreal cysticercosis with exudative retinal detachment. Computed
tomographic scan showed disseminated neurocysticercosis and cysticercosis of
the medial and inferior recti of both the eyes. The patient was started on
albendazole and prednisolone under neurologist's supervision. Subsequent
computed tomographic scan showed resolution of the extraocular muscle cysts
and decrease in the number of neurocysticerci. The patient has had no further
seizures. This is the first report of simultaneous intraocular and extraocular
cysticercosis.

PMID: 16779570 [PubMed - in process]

20.
Subarachnoidal and intraventricular human neurocysticercosis: application of an antigen detection assay for the diagnosis and follow-up.


Background: Neurocysticercosis (NC) is a parasitic disease of the central nervous system caused by the larval stage of Taenia solium. Although imaging studies are recommended for diagnosis and follow-up of patients, their high cost and restricted availability limit their use. Among various immunological tests, the detection of HP10 antigen in cerebral spinal fluid (CSF) has proved to be a useful tool for the diagnosis of NC in the case of viable but not dead parasites. OBJECTIVES: This study was designed to evaluate the usefulness of the detection of HP10 antigen for the diagnosis and follow-up of NC patients. METHODS: The effectiveness of this HP10 assay was analysed for the CSF of 46 confirmed NC cases (21 men, 25 women) who had been clinically and radiologically described. RESULTS: In 21 of 24 NC patients (87.5%) with viable parasites localized in the SA space at the base of the brain or in the ventricles these were detected by means of the HP10 assay, whilst none of the three patients with viable parasites in the parenchyma or sulci had these detected. Used for the follow-up of patients after cysticidal treatment, it was showed that levels of HP10 dropped significantly only among those patients whose cysticerci were clearly damaged. CONCLUSIONS: HP10 antigen assay is recommended as a support for diagnosis and follow-up in NC patients with viable parasites localized in the SA space at the base of the brain or in the ventricles, thereby potentially reducing the number of imaging studies required.

PMID: 16772017 [PubMed - indexed for MEDLINE]

Estimation of the cost of Taenia solium cysticercosis in Eastern Cape Province, South Africa.

Carabin H, Krecek R.C, Cowan, L.D, Michael L, Foyaca-Sibat H, Nash T, Willingham AL. Department of Biostatistics and Epidemiology, College of Public Health, Oklahoma University Health Sciences Center, Oklahoma City, OK, USA. helene-carabin@ouhsc.edu

OBJECTIVES: To provide a comprehensive estimate of the societal costs of Taenia solium cysticercosis for the Eastern Cape Province (ECP), South Africa, as an objective measure of its impact in this endemic area. METHODS: Epidemiological data on the prevalence of epilepsy, proportion of epilepsy cases due to neurocysticercosis (NCC) and consequences of cysticercosis were gathered
from published and unpublished sources. Economical data were mostly obtained from governmental sources. Three methods were used for estimating productivity losses. Monte Carlo sampling was used to represent the uncertainty of the estimates with 95% Credible Intervals (95% CI). The estimation is for 1 year using a societal approach. All costs are reported in 2004 US Dollars. RESULTS: Overall, there were an estimated 34 662 (95% CI: 17 167-54 068) NCC-associated cases of epilepsy in ECP in 2004. The overall monetary burden (in million of US Dollars) was estimated to vary from US Dollars 18.6 (95% CI: US Dollars 9.0-32.9) to US Dollars 34.2 (95% CI: US Dollars 12.8-70.0) depending on the method used to estimate productivity losses. The agricultural sector contributed an average of Dollars 5.0 million. The prevalence of epilepsy, proportion of productivity reduction and the proportion of epilepsy cases attributable to NCC had the largest impact on the overall estimates. CONCLUSION: This preliminary estimate suggests that T. solium cysticercosis results in considerable monetary costs to a region that is already economically constrained. Because this infection is preventable, these results could guide stakeholders in deciding where to invest scarce health and agricultural resources in their countries.

PMID: 16772013 [PubMed - indexed for MEDLINE]


Seroprevalence of cysticercosis in a rural village of Ranau, Sabah, Malaysia.

Noor Azian M.Y., Hakim, S.L, Sumiati, A, Norhafizah M. Parasitology Unit, Infectious Diseases Research Center, Institute for Medical Research, Kuala Lumpur, Malaysia. noorazian@imr.gov.my

The objective of this study was to determine exposure to cysticercosis among a rural population in a selected village in Ranau, Sabah, Malaysia. A total of 135 serum samples were analyzed. The result showed that the seroprevalence of cysticercosis antibodies was 2.2%. There was no significant difference in the seroprevalence among age groups (p=0.307). Even though there was a slightly higher antibody titer in males compared to females, the difference was not significant (p=0.400). The results indicate evidence of exposure to cysticercosis in this rural population.

PMID: 16771213 [PubMed - indexed for MEDLINE]

Ocular manifestations of helminthic infections: onchoceriasis, cysticercosis, toxocariasis, and diffuse unilateral subacute neuroretinitis.

Ament, C.S., Young, L.H. Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, MA 02114, USA.

PMID: 16770150 [PubMed - indexed for MEDLINE]


Disseminated cysticercosis with asymptomatic involvement of the heart.

Sousa, Ade, Q., Solon, F.R., da Costa, Filho, J.E., Lima, F.H. Sao Jose Hospital, Centre of Tropical Medicine, Federal University of Ceara, Fortaleza, CE, Brazil. aqsousa@ufc.br

PMID: 16767320 [PubMed - in process]


Towards the implementation of the "basket of options" approach to helminth parasite control of livestock: emphasis on the tropics/subtropics.

Krecek, R.C., Waller, P.J. Ross University School of Veterinary Medicine, Basseterre, St. Kitts, West Indies. tkrecek@rossvet.edu.kn

The virtual reliance on anthelmintic drugs alone to control internal parasites of livestock is inappropriate and ultimately unsustainable. In the tropics and subtropics, widespread and high levels of anthelmintic resistance, particularly in nematode parasites of small ruminants, is rife. But more to the point, many farmers in these regions of the world are resource poor and cannot afford, or are reluctant to purchase drugs that may also be of dubious quality. As it is with any intervention, the benefits must outweigh the costs. This is not only in terms of conventional parameters such as reduced mortality and increasing productivity (meat, milk, fibre and traction power) of livestock, but also within the broad framework of helminths of veterinary/human importance, the aim should be a positive impact on reducing the threat of helminth zoonoses. However, understanding the issues involved and education of the end-users (farmers) is of fundamental importance, before any internal parasite control program should be promoted. Within the above context, we provide examples of how the "basket of
options" approach could be adopted for the control of three quite disparate helminth problems in the tropics and subtropics, viz.: strongyle nematode infections of donkeys, the Taenia solium cysticercosis/taeniosis problem of pig and man and Haemonchus contortus infections in small ruminants. The "best practice" approaches can be defined as those "basket of options" that are practical, affordable, available and appropriate, whether to the commercial producer, or to the resource-poor farmer. Constraints that may restrict applying such options are accessibility to, and affordability of, suitable remedies and above all, the availability of information needed to make informed decisions in this regard.

PMID: 16764993 [PubMed - in process]

26.
Related Articles, Links

Canine tooth syndrome due to superior oblique myocysticercosis


A 13-year-old boy had right periocular pain, upgaze vertical diplopia, and lid swelling. Right extorsion and hypodense cystic swelling in the right superior oblique involving the muscle and tendon behind the trochlea existed. Oral treatment was prescribed. MRI revealed a collapsed cyst. Ocular motility improved, but levoelevation diplopia persisted.
PMID: 16761645 [PubMed - indexed for MEDLINE]

27.
Orbit. 2006 Jun;25(2):163-5      Related Articles, Links

Lacrimal canalicular obstruction by cysticercus cellulosae

Kaur, A., Agrawal, A., Agrawal, P.K., Goel, M.M. Department of Ophthalmology, King George's Medical University, Lucknow, India. apjit@rediffmail.com

Ocular adnexal infestation in cysticercosis is unusual. A case of lacrimal canalicular obstruction by cysticercus cellulosae in a 35-year-old female is reported. The diagnosis was established by histopathological examination of the cyst, surgically removed from the above patient with a suspected benign neoplasm in the lacrimal passage. To our knowledge, this is the first case report of lacrimal canalicular obstruction by cysticercus cellulosae.
PMID: 16754231 [PubMed - in process]
28. Vaccine. 2006 Apr 18; [Epub ahead of print] Related Articles, Links

Induction of protection against porcine cysticercosis in growing pigs by DNA vaccination

Guo, A., Jin, Z., Zheng, Y., Hai, G., Yuan, G., Li, H., Cai, X. Key Laboratory of Veterinary Parasitology of Gansu Province, State Key Laboratory of Veterinary Etiological Biology, Lanzhou Veterinary Research Institute, CAAS, Lanzhou, Gansu 730046, China.

A DNA vaccine, pcDNA3-B, was developed by using the nucleotide sequence of Taenia solium B antigen and cloning into pcDNA3.1 plasmid. The growing pigs were vaccinated by one intramuscular infection of 200 or 1000μg pcDNA3-B. The immunization with 1000μg of pcDNA3-B showed 92.6% protection when the pigs were challenged by T. solium eggs and four of the five pigs vaccinated had no viable cysts. The results provide encouraging information on the use of pcDNA3-B vaccination for the prevention of cysticercosis.

PMID: 16750874 [PubMed - as supplied by publisher]

29. Pol J Pathol. 2006;57(1):53-4 Related Articles, Links

Cysticercosis of breast--a case report.

Agnihotri, S., Talwar, O.P., Pudasaini, S., Baral, R. Department of Pathology, SSR Medical College, Mauritius smritiayushi@yahoo.co.in

Cysticercosis can affect any organ or tissue of the body. Involvement of the breast is a rare presentation. In this report we present a case of 22 years young married woman who came with the history of painless mobile swelling in the right side of the breast. An excision biopsy was carried out. Histopathological examination revealed the presence of typical cysticercus larva and a definite diagnosis of cysticercosis was made. To conclude, cysticercosis of the breast is rare and it should be considered as a differential diagnosis for a lump in the breast.

PMID: 16739884 [PubMed - indexed for MEDLINE]


Human cardiac cysticercosis. (Article in Spanish)
Cysticercosis is emerging as a serious public health and agricultural problem in many poorer countries of Latin America, Africa, and Asia. Caused by the pork tapeworm, *Taenia solium*, this zoonotic disease forms larval cysts in humans and pigs that can lead to epilepsy and death in humans, reduces the market value of pigs and makes pork unsafe to eat. It occurs where pigs range freely, sanitation is poor, and meat inspection is absent or inadequate, and is thus strongly associated with poverty and smallholder farming. Although theoretically easy to control and declared eradicable cysticercosis remains neglected in most endemic countries due to lack of information and awareness about the extent of the problem, suitable diagnostic and management capacity, and appropriate prevention and control strategies. Human neurocysticercosis occurs when the larval cysts develop in the brain. It is considered to be the most common parasitic infection of the human nervous system and the most frequent preventable cause of epilepsy in the developing world. Thus far the infection has not been eliminated from any region by a specific program, and no national control programs are yet in place. We consider the tools available for combating cysticercosis and suggest simple packages of interventions, which can be conducted utilizing existing services and structures in the endemic countries to provide appropriate and sustainable control of the disease.

PMID: 16735172 [PubMed - as supplied by publisher]
Cysticercosis is due to the establishment of the larval stage of the zoonotic cestode parasite *Taenia* solium. The infection causes substantial human morbidity and mortality, particularly in several Latin American countries and parts of Africa and Asia, as well as economic losses in pig husbandry due to condemnation of infected pork meat. The life cycle of *T. solium* includes human beings as definitive hosts and pigs as intermediate hosts. Cysticercosis is acquired by the ingestion of eggs released by human tapeworm carriers, who become infected after ingesting pork meat contaminated with cysticerci. *Taenia* solium transmission has been associated with poverty, lack of sanitary services and practices of rearing backyard pigs with free access to the areas that villagers use as toilets, as well as cultural behaviour. Nonetheless, due to the recent increase of migration and tourism, industrial countries are also reporting cases of human cysticercosis. There are many epidemiological studies that have been conducted mainly in Latin American countries that have evaluated intervention measures for control of cysticercosis including the development and testing of vaccines. Furthermore, the involvement of international agencies and institutions, such as the World Health Organization, the Food and Agriculture Organization and the International Livestock Research Institute, as well as the commitment of policymakers, scientists and field workers, are key means for the sustainable control and, hopefully, eradication of *T. solium* infections.

PMID: 16730125 [PubMed - in process]

In vitro oncosphere-killing assays to determine immunity to the larvae of *Taenia pisiformis, Taenia ovis, Taenia saginata, and Taenia solium*.


Taeniid cestodes infect humans and livestock, causing considerable morbidity and mortality, as well as economic loss. Substantial progress has been made toward the production of recombinant vaccines against cysticercosis in livestock animals. Further development of these vaccines would be aided if a reliable in vitro test were available to measure host-protective immune responses in vaccinated animals. Here, we describe in vitro oncosphere-killing assays for the quantification of host-protective serum antibodies against *Taenia pisiformis, Taenia ovis, Taenia*
saginata, and *Taenia* solium in rabbits, sheep, cattle, and pigs, respectively. Activated oncospheres of *T.pisiformis*, *T. ovis*, *T. saginata*, and *T. solium* were incubated in vitro in culture medium, test serum, and a source of complement, and oncosphere killing was assessed after 10 days of culture. In vitro oncosphere killing reflected the presence of specific antibody, and the oncosphere-killing assay typically indicated immunity to the homologous parasite that had been determined in vivo. This study describes the first reliable oncosphere-killing assays for *T. pisiformis*, *T. ovis*, *T. saginata*, and *T. solium*. These assays will be used for further research into the optimization of recombinant vaccines against cysticercosis.

PMID: 16729683 [PubMed - indexed for MEDLINE]

34. Radiology. 2006 Jun;239(3):650-64. Related Articles, Links

Intracranial cysts: radiologic-pathologic correlation and imaging approach.

Osborn, A.G., Preece, M.T. Department of Radiology, University of Utah Medical Center, Salt Lake City, Utah 84103, USA.

Cysts and cystic-appearing intracranial masses have a broad imaging and pathologic spectra. The authors review the pathologic findings, origin, radiologic appearance, and differential diagnosis of many different intracranial cysts. A diagnostic algorithm based on most common anatomic locations is presented that helps narrow the differential diagnosis.

PMID: 16714456 [PubMed - indexed for MEDLINE]


Bruns syndrome caused by intraventricular neurocysticercosis treated using flexible endoscopy.

Torres-Corzo J, Rodriguez-della Vecchia R, Rangel-Castilla L. Clinic of Neurosurgery, Department of Neurosurgery, Foundation for Nervous Diseases Study and Treatment, University of San Luis Potosi Medical School, Potosi, Mexico. torresjaime@yahoo.com.mx

OBJECT: Neurocysticercosis is the most frequent cause of hydrocephalus in adults in regions where the disease is endemic, including Latin America. The prognosis for intraventricular neurocysticercosis is worse than that for the intraparenchymal form of the disease, making treatment especially important. Although active and viable intraventricular cysts produce no reaction in the host, they can cause noncommunicating hydrocephalus, whose onset is frequently abrupt. Sometimes
the increasing intracranial pressure due to obstruction of the cerebral aqueduct (ball-valve mechanism) is intermittent, producing relapsing/remitting symptoms; this life-threatening phenomenon is called "Bruns syndrome." METHODS: Between 1996 and 2004, among a group of 285 patients with neurocysticercosis and Bruns syndrome caused by cysticercal cysts of the third ventricle was diagnosed in seven patients by using magnetic resonance imaging. An endoscopic procedure with a flexible cerebral endoscope was performed, intact parasitic cysts were removed, and a complete exploration was undertaken to look for more cysticercal cysts in the whole ventricular system and the subarachnoid basal cisterns. There were no deaths or complications. All seven patients were asymptomatic during a follow-up period ranging from 1 to 5 years. CONCLUSIONS: Flexible cerebral endoscopy allows one, in a minimally invasive manner, to approach the ventricular system and subarachnoid basal cisterns and to remove intraventricular neurocysticercal cysts. Flexible endoscopy is an alternative treatment for Bruns syndrome caused by neurocysticercosis of the third ventricle. PMID: 16703879 [PubMed - in process]


Common conditions leading to cattle carcass and offal condemnations at 3 abattoirs in the Western Province of Zambia and their zoonotic implications to consumers.

Phiri AM. Clinical Studies Department, School of Veterinary Medicine, The University of Zambia, PO Box 32379, Lusaka, Zambia. amphiri2001@yahoo.co.uk

From a total of 32 717 cattle slaughtered, 183 whole carcass condemnations were attributable to 9 diseases and conditions, namely, tuberculosis (TB), cysticercosis, emaciation, generalised lymphadenitis, jaundice, abscesses, moribund, sarcosporidiosis and odour. Bovine TB was the most important cause of condemnations (152/183, 83.1%). Bovine cysticercosis and sarcosporidiosis accounted for 5/183 (2.7%) and 8/183 (4.4%), respectively, while each of the remaining conditions contributed less. Among the many conditions responsible for offal/organ condemnations were fascioliasis, contagious bovine pleuropneumonia, hydatidosis and TB. In terms of number and weight, Fasciola gigantica infections made livers and lungs the most condemned offals (20.1% and 0.7%, respectively). Hydatidosis was the cause of 0.9% lung and 0.1% liver losses. Cysticercus bovis contributed to only 0.05% of all inspected tongues, hearts, and heads. TB was very rare in heads (0.01%). The financial impact of whole carcasses and offals condemned during the study period was enormous and deprived livestock farmers of the much needed revenue and consumers of protein sources. Much or all of the condemned material that could have been useful was wasted by not being retrieved for conversion to processed meat, bone meal or pet food. Failure to
detect lesions of potential zoonotic diseases at slaughter poses a health risk to consumers especially when meat is eaten undercooked.
PMID: 16700473 [PubMed - in process]

37. 
Microbes Infect. 2006 Feb 7; [Epub ahead of print] Related Articles, Links

Brucella spp. lumazine synthase: a novel adjuvant and antigen delivery system to effectively induce oral immunity.


Brucella lumazine synthase (BLS) has been previously used with success as a delivery system for systemic immunization against murine cysticercosis. We herein determined the usefulness of BLS as a new antigen-delivery system and mucosal-adjuvant using KETc1, one of the peptides of the anti-cysticercosis vaccine. A protection of up to 98% was induced when KETc1 was used as a chimera fused to BLS. Used as adjuvant of KETc1, BLS also induced a high level of protection (79%), which did not significantly differ from that induced by the cholera toxin (74%). KETc1 and BLS administered separately also reduced the parasite load. KETc1 administered orally as a chimera, and to a lesser extent with BLS as adjuvant, elicited IgG and IgA specific antibodies, which were detectable both in fecal extracts and in sera, and increased B and CD4 activated cells. BLS-KETc1 also increased the levels of transcription of TNF-alpha, IL-2 and IFNgamma in Peyer's patches, and in spleen, only increased TNF-alpha was observed. Overall, these results showed that BLS can be used as both an antigen-carrier and as an adjuvant in the design of new oral subunit vaccines.
PMID: 16697684 [PubMed - as supplied by publisher]

38. 
J Neurol. 2006 Apr 28; [Epub ahead of print] Related Articles, Links

Multicystic tumor in the fourth ventricle : Consider neurocysticercosis.

Costa CU, von Einsiedel HG, Disko R, Berthele A. Inst. of Medical Microbiology Immunology and Hygiene, Technical University, Munich, Germany.

PMID: 16649100 [PubMed - as supplied by publisher]
Epidemiological survey of swine cysticercosis using ante-mortem and post-mortem examination tests in the southern highlands of Tanzania.

Boa ME, Mahundi EA, Kassuku AA, Willingham AL 3rd, Kyvsgaard NC. Department of Veterinary Microbiology and Parasitology, Sokoine University of Agriculture, P.O. Box 3019, Morogoro, Tanzania.

Pig keeping is known to be popular in the regions of the southern highlands zone (Mbeya, Iringa and Ruvuma) of Tanzania where more than 60% of pigs under the small-scale production system are raised. However, no epidemiological surveys on porcine cysticercosis have been conducted in the zone in spite of unofficial reports indicating the disease to be a widespread problem. To estimate prevalence rates and risk factors for porcine cysticercosis in Chunya and Iringa Rural Districts and Ruvuma Region (Songea and Mbinga Districts), 722, 808 and 302 live pigs, respectively, were examined by lingually and the prevalence of swine cysticercosis was found to be 7.6%, 8.4% and 16.9% for Chunya and Iringa Rural Districts, and Ruvuma Region, respectively. Structured observations and questionnaire interviews were used to analyse pig rearing practices and household use of latrines in Chunya and Iringa Rural Districts only. The analysis of effect of pig management practices, lack of a latrine, eating undercooked pork, home slaughter and no inspection of pork and lack of knowledge of T. solium on their association to tongue positivity in pigs was done by means of a contingency table. Odds ratios (OR) with corresponding 95% confidence intervals (95% CI) and p-values were calculated. Structured questionnaire interviews identified factors associated with the disease prevalence in both Chunya and Iringa Rural Districts were free-ranging of pigs, home slaughtering of pigs and pork not being inspected. While in Chunya and Iringa Rural Districts lack of latrine and barbecuing were found a risk factor, respectively. To control the disease in the study areas of the southern highlands there is a need for significant improvements regarding the use of latrines, confinement of pigs, pork inspection and thorough cooking of pork.

PMID: 16647211 [PubMed - as supplied by publisher]

Short course of albendazole therapy for neurocysticercosis.

Alarcon F, Maldonado JC. Department of Neurology, Eugenio Espejo Hospital, P.O. Box 17-07-9515, Quito, Ecuador.
Metabolism of steroid hormones by Taenia solium and Taenia crassiceps cysticerci.


Previous in vitro experiments showed that both, Taenia crassiceps and Taenia solium cysticerci have the ability to metabolize exogenous androstenedione to testosterone. Here we evaluate on the capacity of both cysticerci to synthesize several sex steroid hormones, using different hormonal precursors. Experiments using thin layer chromatography (TLC) showed that both cysticerci were able to produce (3)H-hydroxyprogesterone, (3)H-androstenedione and (3)H-testosterone when (3)H-progesterone was used as the precursor. They also synthesized (3)H-androstenediol and (3)H-testosterone when (3)H-dehydroepiandrosterone was the precursor. In addition, both cysticerci interconverted (3)H-estradiol and (3)H-estrone. These results, strongly suggest the presence and activity of the Delta4 and Delta5 steroid pathway enzymes, 3beta-hydroxysteroid dehydrogenase/Delta(5-4) isomerase-like enzyme (3beta-HSD), that converts androstenediol into testosterone; and the 17beta-hydroxysteroid dehydrogenase that interconverts estradiol and estrone, in both types of cysticerci.

PMID: 16644209 [PubMed - as supplied by publisher]
specific assay, which uses six glycoprotein antigens on a strip to detect antibodies to Taenia solium cysticerci. Although the appearance of bands at any of these six sites is considered to be a positive result, a growing body of evidence suggests that the presence of a single 50-kDa band in this assay may not indicate infection. An audit of 984 samples tested over a 3-year period showed that only two (15.4%) of 13 samples with a single 50-kDa band were associated with a diagnosis of cysticercosis. Possible reasons for this include technical problems, cross-reactivity with other parasites or other diseases, or the presence of a non-specific band. The results suggest that the finding of a single 50-kDa band should be interpreted with caution.

PMID: 16643523 [PubMed - in process]


[Neurocysticercosis in children: clinical study and follow-up of 112 patients.]
[Article in Spanish]

Antoniuk S, Bruck I, Santos LH, Souza LP, Fugimura S. Universidade Federal do Parana, 80035-010 Curitiba, Brasil.

INTRODUCTION. Neurocysticercosis (NC) is the infection of the central nervous system caused by the Taenia solium larva. It is related to a wide variety of clinical symptoms and pathological findings. AIM. Clinical study, diagnosis, treatment and evolution of 112 patients with NC. PATIENTS AND METHODS. 112 patients with NC, between 1 and 14 years of age, were evaluated and followed from 18 months up to 13 years. RESULTS. The most common clinical symptoms were epileptic seizures and signs of intracranial hypertension. The disease progressed as follows: active forms were seen in around 39% of the cases (viable cysts in 3% and transitional/granulomatous form in 36%), encephalitic form in 22% and inactive form (calcifications) in 39%. In the great majority of the cases, a treatment with anti-helmitic was not used. The control of the crises was positive in 86% of the cases -94% in the transitional forms, 93% in the inactive forms and 68% in the encephalitic form-. Recurrence of crises happened after suspension of the medication in 12,5% of the granulomatous form and in 11,2% of the inactive form. Neurological sequelae occurred only in the encephalitic form (12/25 patients). CONCLUSIONS. Clinical findings and clinical evolution of neurocysticercosis in children is related to the evolutive form of the disease. The clinical evolution, including control of the crises and radiological control, is benign in the inactive and active forms, except in the encephalitic forms. The extraparenquimatous form is quite rare in the pediatric group.

PMID: 16642459 [PubMed - in process]
Antibody responses and epitope specificities to the Taenia solium cysticercosis vaccines TSOL18 and TSOL45-1A.

Kyngdon CT, Gauci CG, Gonzalez AE, Flisser A, Zoli A, Read AJ, Martinez-Ocana J, Strugnell RA, Lightowlers MW. Veterinary Clinical Centre, The University of Melbourne, Werribee, Victoria, Australia. c.kyngdon@pgrad.unimelb.edu.au

Taenia solium is a cestode parasite that causes cysticercosis in humans and pigs. This study examined the antibody responses in pigs immunized with the TSOL18 and TSOL45-1A recombinant vaccines against T. solium cysticercosis. Immunization with these proteins induced specific, complement-fixing antibodies against the recombinant antigens that are believed to be associated with vaccine-induced protection against T. solium infection. Sera from immunized pigs were used to define the linear B-cell epitopes of TSOL18 and TSOL45-1A. Prominent reactivity was revealed to one linear epitope on TSOL18 and two linear epitopes on TSOL45-1A. These, and oncosphere antigens from other taeniid cestodes, contain a protein sequence motif suggesting that they may show a tertiary structure similar to the fibronectin type III domain (FnIII). Comparison of the location of linear antigenic epitopes in TSOL18 and TSOL45-1A within the proposed FnIII structure to those within related cestode vaccine antigens reveals conservation in the positioning of the epitopes between oncosphere antigens from different taeniid species. PMID: 16629704 [PubMed - in process]

Can Taenia solium latent post-oncospheral stages be found in muscle tissue of cysticercosis-infected pigs (Sus scrofa)?


The existence of latent Taenia solium post-oncospheral stages in the tissues of infected pigs has been postulated. To assess whether such structures exist and can be detected, we examined muscle samples from cysticercosis-infected and uninfected pigs. Pork samples were homogenized, centrifuged, and resuspended in saline solution. Round microscopic structures of approximately 10 microm with variable refringence were found in the pellets of all samples from both infected and uninfected pigs. These became homogeneously red after staining with Sudan IV and disappeared after ether extraction. The only difference between samples from infected and uninfected pigs was the presence of inflammatory cells and tissue
necrosis debris in the former group. Taenia solium oncospheres were stained and observed for comparative purposes, before and after inoculation into pork. Control oncospheres were ellipsoidal, had nucleated basophile cells in their interior, and showed red aggregates on their surfaces when stained with 3% Sudan IV. While rounded microscopical structures similar to those previously reported were found, these differed morphologically from oncospheres, were of a lipid nature, and occurred in both infected and uninfected animals. No evidence supporting the presence of latent post-oncospheral stages of Taenia solium was generated in this series of experiments.

PMID: 16629340 [PubMed - indexed for MEDLINE]

46.

Prevalence of anti-cysticercus antibodies in slum, rural and urban populations in and around Union territory, Chandigarh.

Khurana S, Aggarwal A, Malla N. Department of Parasitology and Community Medicine, PGIMER, Chandigarh.

A comparative analysis for the prevalence of anti-cysticercus antibodies was carried out in urban, rural and slum population in & around Union territory of Chandigarh. Prevalence of anti-cysticercus antibodies in different population groups was found to be 17.3% with highest prevalence (24%) reported from slum areas followed by that of rural areas (20%) and least in the urban organized sectors (8%). Only 8% of the seropositive individuals had history suggestive of neurocysticercosis. Overall, females showed the highest anti-cysticercus response of 20.4%.

PMID: 16625979 [PubMed - in process]

47.
Arq Neuropsiquiatr. 2006 Mar;64(1):149-52. Epub 2006 Apr 5. Related Articles, Links

Intramedullary spinal cysticercosis simulating a conus medullaris tumor: case report.


Cysticercosis is an endemic condition in many developing countries. Although it is the most common parasitic disease of the central nervous system, cysticercal involvement of the spinal cord is rare. It may occur as intradural extramedullary,
intramedullary, intramedullary associated with intradural-extradural or as the vertebral presentation. We report the case of a 53-year-old woman who presented with low back pain of acute onset and no other symptoms. Magnetic resonance imaging (MRI) showed an intramedullary cyst of the conus medullaris region which, at pathological examination, was diagnosed as a cysticercal cyst. She refused anticyticercal agents and steroids postoperatively. After an eight-year follow-up, the patient performs the activities of her daily living with no difficulties, and annual spinal MRIs show no residual signs of the disease. Clinical, pathophysiological, diagnostic and therapeutic aspects of spinal cord intramedullary cysticercosis are discussed.

PMID: 16622575 [PubMed - in process]

48.
Related Articles, Links

Influence of the cerebrospinal fluid laboratory parameters in the ELISA test for neurocysticercosis using a total cysticerici antigen.

Casanova CS, Ribeiro MJ, Goncalves RR, Faria LC, Peralta JM, Puccioni-Sohler M. Neurology Service, Gaffree Guinile University Hospital, Federal University of Rio de Janeiro State, Rio de Janeiro, RJ, Brazil.

To evaluate if the cerebrospinal fluid (CSF) parameters may influence the cysticercosis immunoreactivity response in the CSF. CSF samples of 109 patients were analyzed and classified in three groups, according to the neurological manifestations and the reactivity in antibody-enzyme linked immunosorbent assay (Ab-ELISA) testing in CSF for neurocysticercosis (NC): group A, 18 patients with neurological disorders compatible with NC and reactive Ab-ELISA in CSF for NC; group B, 50 patients with neurological disorders non-compatible with NC and reactive Ab-ELISA for NC; group C, 41 patients with neurological disorders non-compatible with NC and non-reactive Ab-ELISA in CSF for NC. The CSF analysis in group A was compatible with NC. The group B in comparison to the groups A and C presents higher frequency and intensity of hypercytosis, presence of red blood cells in CSF, protein concentration and immunological reactive test for other etiological agents (p<0.05). Based on the present data, we suggest that the inflammatory process and high protein concentration may determine false positive reactions in the Ab-ELISA test for NC in the CSF.

PMID: 16622554 [PubMed - in process]

49.
Vet Parasitol. 2006 Apr 16; [Epub ahead of print]
Related Articles, Links
Lymphocyte apoptosis in the inflammatory reaction around Taenia solium metacestodes in porcine cysticercosis.

Solano S, Cortes IM, Copitin NI, Tato P, Molinari JL. Departamento de Microbiologia y Parasitologia, Facultad de Medicina, Universidad Nacional Autonoma de Mexico, Ciudad Universitaria, Mexico, D.F. 04510, Mexico.

In the current research, we report apoptosis of lymphocytes in the inflammatory reaction around metacestodes in muscle tissue from cysticercotic pigs. Two events, high metacestode viability (100%) and high cysteine protease activity were found to be closely related to a high phosphatydilserine expression by inflammatory lymphocytes (56%). Testing the RPMI medium used for washing away inflammatory cells from metacestodes with 100% viability, with the fluorescent substrate Z-Phe-Ala-AFC for measuring cysteine protease activity, significant fluorescent values were found. In contrast, tests performed with RPMI medium used for washing away inflammatory cells from metacestodes with 90% viability or less, showed low fluorescence values. Flow cytometry analyses of inflammatory cells obtained from four naturally cysticercotic pigs, and stained with Annexin-V/PI, showed lymphocytes expressing phosphatidylserine with values of 0, 6, 41 and 56% on their outer surfaces. Electron microscopy studies of inflammatory cells from metacestodes with 100% viability, showed lymphocytes with strangled and fragmented nuclei, and heterochromatin displaced to the nuclear periphery. In addition, DNA from these cells showed fragmentation in electrophoresis assays. Apoptosis of lymphocytes in the inflammatory reaction around Taenia solium metacestodes, might have been induced by the parasite cysteine protease, and may be involved in impairing cell-mediated immune responses in human and porcine cysticercosis.

PMID: 16621283 [PubMed - as supplied by publisher]

50.
Headache. 2006 Mar;46(3):523-4. Related Articles, Links

Chronic long-standing headache due to neurocysticercosis.

Finsterer J, Li M, Rasmkogeler K, Auer H. Krankenanstalt Rudolfstiftung, Vienna, Austria.

A 35-year-old Chinese woman presented with a 26-year history of persistent headache, relieved only by diuretics. Characteristic CT findings, peripheral eosinophilia, lymphocytic CSF pleocytosis, elevated CSF IgG, positive oligoclonal bands, antibody-positive ELISA, and Western blot results with Taenia solium antigen, and a favorable response to albendazole led to the diagnosis of neurocysticercosis.

PMID: 16618277 [PubMed - in process]

[Neurocysticercosis as the cause of epileptic seizure. Rare occurrence of pork tapeworm infection in Scandinavia] [Article in Swedish]

Puschmann A, Cronqvist J, Maly P, Englund E, Pessah-Rasmussen H. Neurologiska kliniken, Universitetssjukhuset i Lund. a_puschmann@hotmail.com

Publication Types: · Case Reports
PMID: 16618038 [PubMed - indexed for MEDLINE]


Taeniosis-cysticercosis complex in individuals of a peasants' settlement (Teodoro Sampaio, Pontal of Paranapanema, SP, Brazil).

Prestes-Carneiro LE, Freitas Sde B, Zago SC, Miguel NA, Primo OB, Iha AH, Espindola NM, Vaz AJ. Departamento de Imunologia, Universidade do Oeste Paulista, 19050-900 Presidente Prudente, SP, Brazil. luiz@unoeste.br

In order to evaluate the taeniosis-cysticercosis complex in a population of a peasants' settlement, located at Teodoro Sampaio, state of Sao Paulo, Brazil (longitude 52 degrees 36'12", latitude 22 degrees 17'12") a series of laboratory markers were determined. After signing an informed consent, participants answered a standardized questionnaire. To determine anti-Taenia solium cysticercus antibodies, the samples were tested by enzyme linked immunoabsorbent assay using 18-and 14-kDa antigen proteins from vesicular fluid of Taenia crassiceps (VF-Tcra). The reactive and inconclusive ELISA samples were tested by immunoblotting. Total IgE levels were determined by chemiluminescence's assay and hemogram by flow cytometer flux counter. A total of 84 individuals, 5.9% presented anti-T. solium cysticercus antibodies in ELISA and 3.6% were strongly reactive in the 18/14 kDa immunoblotting confirmatory test. All of the individuals with positive antibodies showed elevated Total IgE levels. We conclude that the frequency of anti-T. solium cysticercus antibodies in this population is higher than other regions considered endemic in Sao Paulo. Thus, it is important to carry out surveys in Peasants' settlement areas with the objective of establishing public health measures for prevention and control of infectious diseases such as taeniosis-cysticercosis.
PMID: 16612507 [PubMed - in process]

Short report: cysticercosis in an Egyptian mummy of the late Ptolemaic period.

Bruschi F, Masetti M, Locci MT, Ciranni R, Fornaciari G. Department of Experimental Pathology, University of Pisa, Pisa, Italy. fbruschi@med.unipi.it

We describe here an ancient case of cysticercosis that was discovered in an Egyptian mummy of a young woman of about 20 years of age who lived in the late Ptolemaic period (second to first centuries b.c.). On removal of the stomach and its rehydration, a cystic lesion in the stomach wall was observed by naked eye. Microscopical examination of sections of this lesion revealed a cystic structure, with a wall, with numerous projecting eversions, a characteristic feature of the larval stage (cysticercus) of the human tapeworm Taenia solium (or "pig tapeworm"). Immunohistochemical testing with serum from a T. solium-infected human confirmed the identity of the cyst. This finding is the oldest on record of the antiquity of this zoonotic parasite. This observation also confirms that, in Hellenistic Egypt, the farming of swine, along with man an intermediate host of this parasite, was present, and supports other archeological evidence.

Publication Types: · Historical Article
PMID: 16606991 [PubMed - indexed for MEDLINE]


Detection of antibodies against free-living amoebae Balamuthia mandrillaris and Acanthamoeba species in a population of patients with encephalitis.

Schuster FL, Honarmand S, Visvesvara GS, Glaser CA. Viral and Rickettsial Disease Laboratory, California Department of Health Services, Richmond, CA 94804, USA. fschuste@dhs.ca.gov

BACKGROUND: Balamuthia mandrillaris and Acanthamoeba species are 2 free-living amoebae responsible for granulomatous amoebic encephalitis in humans and animals. We have screened serum samples from hospitalized patients with encephalitis for antibodies against these 2 amoebae as a means of detecting a disease with few defining symptoms and a poor prognosis. METHODS: Indirect immunofluorescence antibody (IFA) staining of serum samples from patients with encephalitis was conducted over a period of 6 years to detect amoeba antibodies. More than 250 serum samples from patients hospitalized with encephalitis were screened. Most of the samples were from patients in California and were screened
as part of the California Encephalitis Project, with a small number of specimens from other states. RESULTS: During the course of the study, 7 cases of Balamuthia encephalitis were detected; all cases were detected in Hispanic individuals, and all cases were fatal. Examination of hematoxylin-eosin-stained and immunostained sections of brain tissue obtained at biopsy or autopsy for amoebae confirmed balamuthiasis in all serum samples with positive IFA results. One case of Acanthamoeba encephalitis was detected in an immunocompromised individual with a normal antibody titer by identification of amoebae in immunostained brain tissue obtained at autopsy. CONCLUSIONS: IFA can be successfully used in screening for balamuthiasis and acanthamoebiasis in patients whose clinical presentation, laboratory results, and neuroimaging findings are suggestive of amoebic encephalitis. Ideally, this can lead to an earlier definitive diagnosis and earlier start of antimicrobial therapy. Without IFA staining, the balamuthiasis cases in our study would have been diagnosed as neurocysticercosis, tumor, tuberculosis, or viral encephalitis or would have been undiagnosed.

PMID: 16586385 [PubMed - in process]


Neurocysticercosis: management issues.

Dua T, Aneja S. Department of Pediatrics, University College of Medical Sciences and GTB Hospital, Delhi 110 095, India.
Publication Types: · Review
PMID: 16585817 [PubMed - indexed for MEDLINE]

56. Parasitol Res. 2006 Apr 1; [Epub ahead of print] Related Articles, Links

Visual diagnosis of Taenia saginata cysticercosis during meat inspection: is it unequivocal?

Abuseir S, Epe C, Schnieder T, Klein G, Kuhne M. Centre for Food Science, Institute for Food Quality and Safety, University of Veterinary Medicine Hannover, Bischofsholer Damm 15, 30173, Hannover, Germany.

A total of 267 cysts were collected from March to December 2004 from two main abattoirs in northern Germany. The cysts were classified by the usual organoleptic methods during meat inspection as Cysticercus bovis. The reported prevalence of cysticercosis in the abattoirs was 0.48 and 1.08%, respectively. The cysts were examined macroscopically for description of their morphology and constituents and classified as viable or degenerating (dead). The DNA was extracted from these
cysts and subjected to polymerase chain reaction (PCR) for evaluation of the
detection methods used and to make certain that the cysts did indeed belong to C.
bovis, as indicated at the slaughterhouses. Two sets of primers were used with
different sensitivity levels. The first, HDP1, was able to detect 200 fg of Taenia
saginata DNA and 100 pg of C. bovis DNA. The other primer set, HDP2, was able
to detect 1 pg of T. saginata DNA and 1 ng of C. bovis DNA. No more than 52.4%
of the samples tested positive for C. bovis in the PCR using both primers, while
20% of the viable cysts and 49.2% of the degenerating cysts tested negative with
both primers.
PMID: 16583204 [PubMed - as supplied by publisher]

Calcified neurocysticercosis lesions trigger symptomatic inflammation during
antiparasitic therapy.

Department of Neurology, University of Regensburg, Regensburg, Germany.

We report a patient with neurocysticercosis who developed numerous cerebral
edematous lesions while undergoing cysticidal therapy. These lesions
outnumbered viable cystic lesions seen before therapy. Most new lesions were
subsequently found to be associated with former calcifications not seen on initial
MR imaging. Calcified neurocysticercosis lesions can trigger inflammatory
reactions during therapy, and the number and location of calcified
neurocysticercosis lesions may influence treatment decisions.
PMID: 16552011 [PubMed - in process]

[Cutaneous nodules of cysticercosis] [Article in French]
Niamba P, Faye O, Traore A, Barro-Traore F, Gaulier A. Service de Dermatologie-
Venerologie, CHU Yo, 014030 Ouagadougou 01, Burkina Faso.
niamba_pascal@yahoo.com

Publication Types: · Case Reports
PMID: 16550139 [PubMed - indexed for MEDLINE]

Anti-Taenia solium metacestode IgG antibodies in serum samples from inhabitants of a central-western region of Brazil.

Oliveira HB, Rodrigues RM, Barcelos IS, Silva LP, Costa-Cruz JM. Laboratorio de Parasitologia, Instituto de Ciencias Biomédicas, Universidade Federal de Uberlandia, SP, Brazil.

A total of 354 serum samples from inhabitants who frequent the Clinical Laboratory in Catalao, Goias, in the central-western region of Brazil, were collected from June to August, 2002. The samples were evaluated by indirect immunofluorescence antibody tests and an enzyme linked immunosorbent assay in order to detect anti-Taenia solium metacestode IgG antibodies. Reactive and inconclusive samples were tested by Western blotting (WB). Considering WB as a confirmation, the frequency of antibodies in the serum samples of the above population was 11.3% (CI 5.09-17.51). The immunodominant bands most frequently recognized in WB were 64-68 kDa (97.5%) and 47-52 kDa (80%). The percentage of seropositivity to cysticercosis was significantly higher for individuals residing in areas without sewage systems (p < 0.0001). In conclusion, the results indicate a probable endemic situation of cysticercosis in this population. These results reinforce the urgent need for control and prevention measures to be taken by the local public health services.
PMID: 16547581 [PubMed - indexed for MEDLINE]


Fecal specimens preparation methods for PCR diagnosis of human taeniosis.

Nunes CM, Lima LG, Manoel CS, Pereira RN, Nakano MM, Garcia JF. Departamento de Apoio, Producao e Saude Animal, FOA, UNESP, Aracatuba, SP, Brazil. caris@fmva.unesp.br

Sample preparation and DNA extraction protocols for DNA amplification by PCR, which can be applied in human fecal samples for taeniasis diagnosis, are described. DNA extracted from fecal specimens with phenol/chloroform/isoamilic alcohol and DNazol reagent had to be first purified to generate fragments of 170 pb and 600 pb by HDP2-PCR. This purification step was not necessary with the use of QIAlamp DNA stool mini kit. Best DNA extraction results were achieved after eggs disruption with glass beads, either with phenol/chloroform/isoamilic alcohol, DNazol reagent or QIAlamp DNA stool mini kit.
Voltage-gated calcium channel subunits from platyhelminths: Potential role in praziquantel action.

Jeziorski MC, Greenberg RM. Instituto de Neurobiologia, Universidad Nacional Autónoma de Mexico, Campus UNAM-UAQ Juriquilla, Queretaro, Qro. 76001, México.

Voltage-gated calcium (Ca(2+)) channels provide the pathway for Ca(2+) influxes that underlie Ca(2+)-dependent responses in muscles, nerves and other excitable cells. They are also targets of a wide variety of drugs and toxins. Ca(2+) channels are multisubunit protein complexes consisting of a pore-forming alpha(1) subunit and other modulatory subunits, including the beta subunit. Here, we review the structure and function of schistosome Ca(2+) channel subunits, with particular emphasis on variant Ca(2+) channel beta subunits (Ca(v)betavar) found in these parasites. In particular, we examine the role these beta subunits may play in the action of praziquantel, the current drug of choice against schistosomiasis. We also present evidence that Ca(v)betavar homologs are found in other praziquantel-sensitive platyhelminths such as the pork tapeworm, Taenia solium, and that these variant beta subunits may thus represent a platyhelminth-specific gene family.

Calcified cysticercotic lesions and intractable epilepsy: a cross sectional study of 512 patients.

Velasco TR, Zanello PA, Dalmagro CL, Araujo D Jr, Santos AC, Bianchin MM, Alexandre V Jr, Walz R, Assirati JA, Carlotti CG Jr, Takayanagui OM, Sakamoto AC, Leite JP. CIREP, Centro de Cirurgia de Epilepsia, Faculdade de Medicina de Ribeirao Preto, Universidade de Sao Paulo 14.048-900, SP, Brazil. tvelasco@rnp.fmrp.usp.br

BACKGROUND: Neurocysticercosis is a major cause of epilepsy in developing countries and is endemic in Brazil. To test the hypothesis that the aetiological profile of patients with intractable epilepsy in Brazil includes neurocysticercosis, we conducted a cross sectional study investigating the aetiology of intractable epilepsy. METHODS: A total of 512 patients evaluated at the outpatient clinic for
intractable epilepsy at the Ribeirao Preto School of Medicine were included in the survey. Medical intractability was determined on the basis of seizure incidence and severity, and response to appropriate epilepsy management. Neuroimaging included brain CT with non-contrasted and contrasted phases and high resolution MRI. Patients were divided into neurocysticercosis and non-neurocysticercosis groups according to previous diagnostic criteria. RESULTS: The most common epileptogenic lesions were mesial temporal sclerosis (MTS; 56.0%), malformations of cortical development (12.1%), and brain tumours (9.9%). Neuroimaging was normal in 8.7% of patients. Calcifications were found in 27% of patients and were significantly more common in patients with MTS than in those without MTS (p<0.001). Isolated neurocysticercosis was found in only eight patients (1.56%). CONCLUSIONS: These data suggest that neurocysticercosis is an uncommon cause of intractable epilepsy, even in an endemic region such as Brazil, and that it may only represent a coexistent pathology. However, an analysis of our findings reveals that neurocysticercosis was more common in patients with MTS. This finding could suggest either that there is a cause-effect relationship between MTS and neurocysticercosis, or that MTS and neurocysticercosis co-vary with a missing variable, such as socio-economic status.

PMID: 16543527 [PubMed - indexed for MEDLINE]


Epidemiologic classification of seizures associated with neurocysticercosis: observations from a sample of seizure disorders in neurologic care in India.

Singh G, Singh P, Singh I, Rani A, Kaushal S, Avasthi G. Department of Neurology, Dayanand Medical College, Ludhiana, Punjab, India. gagandee@glide.net.in

AIMS: To determine the etiologic role of neurocysticercosis (NC) in a hospital-based sample of epilepsies divided according to International League Against Epilepsy (ILAE) epidemiological criteria and number of seizures prior to presentation. METHODS: A sample comprising 1026 consecutive patients with either definite seizures or epilepsy attending a Neurology Outpatient Service was divided into four subgroups: single seizure (n = 314), incident epilepsy (n = 127), prevalent epilepsy (n = 398) and recurrent acute symptomatic seizures (RASS) (n = 175). The etiologic contribution of NC to each of the subgroups was examined with imaging studies. RESULTS: Neurocysticercosis was diagnosed on imaging studies in 34.6% of patients with seizure disorder of any type, 59.2% of those with a single seizure, 23.7% of those with recurrent seizure disorder, 92.0% of those with RASS, none of cases of incident epilepsy and 2.0% with prevalent epilepsy. A diagnosis of NC was significantly associated with single seizures (P < 0.001). CONCLUSIONS: Imaging abnormalities consistent with NC are frequently noted in persons presenting with a single seizure in neurologic care in NC-endemic
countries like India. The probability of diagnosing NC diminishes with increasing numbers of seizures. Among samples of individuals with recurrent-unprovoked seizures, it is rare for imaging to demonstrate lesions of NC.

PMID: 16542162 [PubMed - indexed for MEDLINE]

64.
Related Articles, Links

Characterization and cloning of T24, a Taenia solium antigen diagnostic for cysticercosis.

Hancock K, Pattabhi S, Whitfield FW, Yushak ML, Lane WS, Garcia HH, Gonzalez AE, Gilman RH, Tsang VC. Division of Parasitic Diseases, Centers for Disease Control and Prevention, Atlanta, GA, USA. khancock@cdc.gov

The third and final diagnostic antigen of the lentil lectin purified glycoproteins (LLGP) extracted from the larval stage of Taenia solium has been characterized, cloned, and expressed. T24 is an integral membrane protein that belongs to the tetraspanin superfamily. It migrates at a position corresponding to 24-kDa and as a homodimer at 42-kDa. Antibodies from cysticercosis patients recognize secondary structure epitopes that are dependent upon correctly formed disulfide bonds. A portion of T24, the large, extracellular loop domain, was expressed in an immunologically reactive form in insect cells. When tested in a Western blot assay with a large battery of serum samples, this protein, T24H, has a sensitivity of 94% (101/107), for detecting cases of cysticercosis with two or more viable cysts, and a specificity of 98% (284/290). The identification and expression of T24H sets the stage for the development of an ELISA suitable for testing single samples and for large-scale serosurveys that is not dependent upon the isolation and purification of antigens from parasite materials.
PMID: 16540186 [PubMed - in process]

65.
Related Articles, Links

Indocyanine Green Angiography for the Detection of Subretinal Nematodes in Diffuse Unilateral Subacute Neuroretinitis (DUSN).

Jesus MR, Isabel R.C., Ramos, Castillo Ana Isabel, AVDA. Donostiarra, n degrees 25 10 degrees 6 degrees, Madrid, 28027, Spain.
Purpose: Observational case-report on the clinical, fluorescein and indocyanine green angiographic findings in a patient with a presumed subretinal nematode. Methods: Retinography, angiography with sodium fluorescein and Indocyanine green were performed in a 45 year old man who presented with a neurosensory macular detachment. The lesion studied with fluorescein angiography was atypical for a choroidal neovascular membrane but suggestive of ocular cysticercosis. Additional indocyanine green angiography was therefore performed. Conclusions: Indocyanine green angiography could be a useful tool for the detection of subretinal nematodes.

PMID: 16532293 [PubMed - as supplied by publisher]


A depressed peripheral cellular immune response is related to symptomatic neurocysticercosis.


Human neurocysticercosis can cause mild or severe neurological symptoms or be completely asymptomatic. This heterogeneity may depend on host factors such as gender, age and immune-inflammatory response. The present study describes the specific peripheral immune response related to the different forms of neurocysticercosis in the adult population of both sexes. Asymptomatic cases (n=26) mainly presented single calcified cysticerci in brain parenchyma or in the subarachnoid space of the sulci with a predominantly TH2 response (IL-4, IL-5, IL-13), high levels of IL-12 in supernatants of specifically stimulated peripheral blood mononuclear cells, and low plasma levels of all specific IgG subclasses. Symptomatic patients (n=26) constituted a heterogeneous group, and had single or multiple cysticerci in vesicular, colloidal, calcified or mixed stages. This group showed parasites located in the subarachnoid space of the base and/or in the sulci, in the ventricular cavities, in parenchyma or in mixed locations. Symptomatic patients showed a depressed specific cellular immune response and increased levels of all specific IgG subclasses. This evidence supports the existence of two clear different immune profiles according to neurocysticercosis that is asymptomatic or symptomatic.

PMID: 16520076 [PubMed - in process]

Clinical signs for identification of neurocysticercosis in swine naturally infected with Taenia solium.

Prasad KN, Chawla S, Prasad A, Tripathi M, Husain N, Gupta RK. Department of Microbiology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow-226014, India.

Taenia solium infection is a zoonotic disease and swine is the natural intermediate host. Till date no literatures have described clinical signs in swine indicative of brain involvement by cysticerci. In the present study we describe such clinical signs of porcine neurocysticercosis (NCC). These signs were excessive salivation, excessive blinking and tearing, and subconjunctival nodule. A total of 30 swine (18 with 2 or all 3 clinical signs and 12 without any sign) underwent magnetic resonance imaging (MRI). All 18 swine with above signs had NCC on MRI along with variable involvement of other organs that were subsequently confirmed by ex vivo MRI, necropsy and histopathology, while none of the 12 animals without any sign had NCC. As development of a porcine NCC model has proved difficult, we propose that naturally infected swine can be identified on the basis of these clinical signs and thus used as a model for further research on NCC.

PMID: 16516537 [PubMed - in process]

68.
Acta Cytol. 2006 Jan-Feb;50(1):114-5. Related Articles, Links


Singh N, Arora VK, Bhatia A. Publication Types: Comment Letter PMID: 16514854 [PubMed - indexed for MEDLINE]

69.
Exp Parasitol. 2006 Feb 27; [Epub ahead of print] Related Articles, Links

Taenia solium and Taenia ovis: Stage-specific expression of the vaccine antigen genes, TSOL18, TSOL16, and homologues, in oncospheres.


Recombinant antigens that have been cloned from Taenia solium and Taenia ovis have been shown to be highly effective when used as vaccines against
cysticercosis in the intermediate hosts. This study investigated the presence of mRNA encoding the TSOL18 and TSOL16 antigens in different life-cycle stages of T. solium, and their related homologues in T. ovis. Reverse transcription-PCR and Southern blotting demonstrated that the antigens are stage-specifically expressed in the oncosphere. The apparent absence of expression of TSOL18 in the metacestode life-cycle stage suggests that the vaccine based on this antigen targets exclusively the early stages in the development of the parasite. PMID: 16510142 [PubMed - as supplied by publisher]


Cysticercosis of the breast: an uncommon cause of lumps.

Conde DM, Kashimoto E, Carvalho LE, Hidalgo SR, Torresan RZ. Department of Gynecology and Obstetrics, Hospital Estadual Sumare, Universidade Estadual de Campinas, Sumare, Brazil. condedelio@uol.com.br

Publication Types: Case Reports
PMID: 16509848 [PubMed - indexed for MEDLINE]


How reliable are serological tests in diagnosis of cysticercosis?

Wadhwa V, Kharbanda P, Rai S.

Publication Types: Case Reports Evaluation Studies -Letter
PMID: 16505569 [PubMed - indexed for MEDLINE]


Starry sky and beaded legs.

Menon B. Department of Neurology, Sri Venkateswara Institute of Medical Sciences, Tirupati, India. bneuro_5@rediffmail.com

Publication Types: Case Reports
PMID: 16500600 [PubMed - indexed for MEDLINE]
73. Liver Transpl. 2006 Mar;12(3):490-1. Related Articles, Links

Early recurrence of neurocysticercosis after orthotopic liver transplant.

Hoare M, Gelson WT, Antoun N, Alexander GJ. Department of Hepatology, Addenbrooke's Hospital, Cambridge, United Kingdom.
PMID: 16498657 [PubMed - in process]


[Cysticercosis contracted in metropolitan France] [Article in French]

Duong TH, Monegierdu Sorbier C, Bailly ER, Guillou-Garnier MF, Fetissof F, Richard-Lenoble D. Service de parasitologie-mycologie-medicine tropicale, CHRU de Tours. th.duong@med.univ-tours.fr

INTRODUCTION: All cases of cysticercosis diagnosed in France are thought to be imported. Our case report concerns a 48-year-old man who has never left Europe, in whom we diagnosed subcutaneous cysticercosis. CASE: Histologic examination of the subcutaneous nodule extracted from this patient's abdominal wall showed cysticercosis. He has never left Europe. Various imaging techniques showed no other localizations of this infection. Neither he nor any members of his family carried adult Taenia solium. DISCUSSION: We present an exceptional case of autochthonous cysticercosis. It is unlikely to be a larva of Taenia solium, since this adult tapeworm has not been seen in mainland France for a very long time. On the other hand, Taenia crassiceps cestodes parasitize the digestive tract of the fox in Auvergne and may occasionally cause cysticercosis in humans.
Publication Types: · Case Reports
PMID: 16493355 [PubMed - indexed for MEDLINE]


Taenia solium: the complex interactions, of biological, social, geographical and commercial factors, involved in the transmission dynamics of pig cysticercosis in highly endemic areas.
If a programme for the control of pig cysticercosis is to be effective it has to be based on good data on the local epidemiology of Taenia solium. In 2002-2003, in a cross-sectional study of pig cysticercosis in the Mexican state of Morelos, 1747 pigs that had been born and reared in rural areas of the state were checked for T. solium infection by tongue inspection. The prevalence of cysticercosis in the pigs was found to vary from 0% to 30% according to the municipality from which the pigs came. Although prevalence appeared to be unaffected by the socio-economic status of the municipality, it was relatively high in areas that lacked latrines, and in pigs that were castrated, pregnant and/or of the native (rather than an imported) breed. The results of questionnaire-based interviews with pig owners revealed that most (64.5%) of the rural pigs, whether infected or not, are slaughtered and consumed within the locality where they were reared. The other pigs are sold at low prices to organised traffickers who take the uninspected pigs to neighbouring urban areas for sale. The observed complexity in the factors affecting the transmission of T. solium to the pigs of Morelos state calls for an intervention strategy of matching complexity, initially targeted at those villages with the highest prevalences of pig cysticercosis. The road transport of pigs needs to be better regulated, and the vaccination and genetic improvement of the rural pigs, and delaying the castration of the boars, should all be considered.

PMID: 16492360 [PubMed - in process]

76.

Estimating disease prevalence in a Bayesian framework using probabilistic constraints.

Berkvens D, Speybroeck N, Praet N, Adel A, Lesaffre E. Department of Animal Health, Institute of Tropical Medicine, Antwerp, Belgium. dberkvens@itg.be

Studies sometimes estimate the prevalence of a disease from the results of one or more diagnostic tests that are applied to individuals of unknown disease status. This approach invariably means that, in the absence of a gold standard and without external constraints, more parameters must be estimated than the data permit. Two assumptions are regularly made in the literature, namely that the test characteristics (sensitivity and specificity) are constant over populations and the tests are conditionally independent given the true disease status. These assumptions have been criticized recently as being unrealistic. Nevertheless, to estimate the prevalence, some restrictions on the parameter estimates need to be imposed. We consider 2 types of restrictions: deterministic and probabilistic
restrictions, the latter arising in a Bayesian framework when expert knowledge is available. Furthermore, we consider 2 possible parameterizations allowing incorporation of these restrictions. The first is an extension of the approach of Gardner et al and Dendukuri and Joseph to more than 2 diagnostic tests and assuming conditional dependence. We argue that this system of equations is difficult to combine with expert opinions. The second approach, based on conditional probabilities, looks more promising, and we develop this approach in a Bayesian context. To evaluate the combination of data with the (deterministic and probabilistic) constraints, we apply the recently developed Deviance Information Criterion and effective number of parameters estimated (pD) together with an appropriate Bayesian P value. We illustrate our approach using data collected in a study on the prevalence of porcine cysticercosis with verification from external data.

PMID: 16477254 [PubMed - in process]

77.
Extensive brain and muscular cysticercosis.

Thomas B, Krishnamoorthy T. Department of Imaging Sciences and Interventional Radiology, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala, India. drbejoy2002@yahoo.com

Publication Types: Case Reports
PMID: 16476923 [PubMed - indexed for MEDLINE]

78.
Cerebral mass in a 13-year-old girl following long-term sojourn in the Tropics.
Klotz P, Tappe D, Abele-Horn M, Warmuth-Metz M, Sorensen N, Speer CP, Girschick HJ. Children's Hospital, University of Wurzburg, Josef-Schneider-Str. 2, 97080, Wuerzburg, Germany.

Cysticercosis of the central nervous system is the main cause of late-onset epilepsy in tropical countries. The case of a 13-year-old German girl with a generalized seizure following long-term sojourns in the Tropics is reported. Cranial imaging showed two cerebral lesions with central calcifications. Serological, molecular and cultural examination of cerebrospinal fluid and blood was negative for various parasites, fungi and bacteria including mycobacteria. Histopathological examination after neurosurgical resection revealed calcareous bodies pathognomonic for platyhelminths, in particular tapeworms. Taken together, the
radiological and histopathological findings indicate infection with cysticerci, the larvae of Taenia solium.

Publication Types: Case Reports
PMID: 16476801 [PubMed - indexed for MEDLINE]

79.

Assessment of routine inspection methods for porcine cysticercosis in Zambian village pigs.

Phiri IK, Dorny P, Gabriel S, Willingham AL 3rd, Sikasunge C, Siziya S, Vercruysse J. Department of Clinical Studies, School of Veterinary Medicine, University of Zambia, PO Box 32379, Lusaka, Zambia. ikphiri@uudial.zm

The value of tongue and meat inspection as diagnostic tools for porcine cysticercosis was assessed in 65 Zambian village pigs by comparing the results with carcass dissections. In addition, the intensity of infections, distribution and viability of cysts in infected pigs were measured. Five pigs (7.7%) were positive on tongue examination, while routine meat inspection showed 12 (18.5%) positives. However, carcass dissections detected cysticerci in 31 (47.7%) pigs. The range in number of cysticerci was 1 to 14,662 per carcass. Cysticerci were distributed throughout the carcass with the highest concentration in the heart, tongue and hind legs. In one animal 13 viable cysts were detected only in the brain. Fourteen pigs had more than 100 viable cysts, six between 2 and 100, and four had single cyst infections. Seven animals harboured only calcified cysts. These findings demonstrate the serious shortcomings of routine detection methods for porcine cysticercosis. While the specificity of tongue palpation and meat inspection was 100%, these tests failed to detect the infection in 83.9% and 61.3% of infected pigs, respectively.
PMID: 16469176 [PubMed - in process]

80.

Outcome of short-term antiepileptic treatment in patients with solitary cerebral cysticercus granuloma.

Verma A, Misra S. Department of Neurology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India. archanashiva@sify.com

OBJECTIVES: The duration of antiepileptic drug (AED) therapy in cases of solitary cerebral cysticercus granuloma (SCCG) presents a major dilemma and the efficacy
of short-term (6 months) vs long-term (2 years) AED therapy has been studied.

MATERIALS AND METHODS: Prospective randomized study of short-term vs long-term AED treatment with SCCG has been undertaken. A total of 206 subjects with new onset seizures with SCCG were randomized into two groups: group A (98 patients) were treated for 6 months and group B (108 patients) were treated for 2 years with AED therapy. The patients were evaluated periodically during and at least 18 months after the tapering of drugs. RESULTS: Partial seizures with or without secondary generalization has been found to be the commonest manifestation occurring in 80.6% of patients with SCCG. In group A 66.3% and in group B 57.4% patients showed complete resolution of computerized tomographic lesion and rest had punctated residual calcification. Statistically, no significant difference in the recurrence of seizures was found in two groups with disappearance of lesion but the difference between calcified residua and complete resolution subset was significant. In patients having residual calcification, 42.2% in group A and 21.7% in group B had recurrence of seizures and the difference was statistically significant (Z = 1.97, P < 0.05). CONCLUSIONS: The study revealed that SCCG with epilepsy is a benign self-limiting disease. A longer duration of therapy is not warranted in patients having total resolution of lesion. Calcified lesion was found to be the most common cause of recurrence of seizures. Higher recurrence rate was observed in short-term therapy in patients having calcified lesions and may require long-term AED treatment.

Publication Types: Randomized Controlled Trial
PMID: 16441247 [PubMed - indexed for MEDLINE]

81.
Related Articles, Links

[Restrictive cardiomyopathy due to myocardial cysticercosis] [Article in Portuguese]

Melo RM, Melo Neto AV, Correa LC, Melo Filho AV. Universidade Federal da Bahia, Salvador, BA. rodimorel@yahoo.com.br

There is no description of cysticercosis affecting heart function. In the present report, the authors describe the case of a 46-year-old woman with cardiac cysticercosis and heart failure, presenting with echocardiographic findings suggestive of restrictive cardiomyopathy and myocardial microcalcifications suggestive of cardiac infiltration by the disease.
PMID: 16429204 [PubMed - in process]

82.
Related Articles, Links
In patients with human immunodeficiency virus, the diagnosis of neurocysticercosis can be complex, and the current diagnostic criteria may not apply. We report 3 cases and suggest including the CD4+ T lymphocyte count as an important factor in the proper diagnosis and treatment of patients with human immunodeficiency virus and potential neurocysticercosis.

PMID: 16421784 [PubMed - in process]

83.
Neurocysticercosis in Kansas.
Daniels TL, Moore TA.
Publication Types: Letter
PMID: 16418427 [PubMed - indexed for MEDLINE]

84.
Evaluation of ELISA and dot blots for the serodiagnosis of neurocysticercosis, in children found to have single or multiple enhancing lesions in computerized tomographic scans of the brain.
Mandal J, Singhi PD, Khandelwal N, Malla N. Department of Parasitology, Postgraduate Institute of Medical Education and Research, Chandigarh-160012, India. drnancymalla@yahoo.com
Although human neurocysticercosis (NCC) is being increasingly recognized in children, diagnosis of the disease can be difficult, and the 'gold standard' criteria that indicate an unambiguous case have still to be established. In the present study, the performances of an ELISA and dot-blot assay, for the detection of antibodies against antigens from larval Taenia solium, were investigated and compared, using sera, from children aged 5-12 years, that were diluted to at least 1:400. Eighty of the subjects (20 aged 5-<8 years and 60 older children) each had the signs and symptoms of NCC, including one brain lesion (N=69) or multiple
brain lesions (N=11) that were visible by computed tomography. Another 100 sera, from children who had tubercular meningitis (N=20) or a parasitic disease other than taeniasis/cysticercosis (N=20) or, apart from a minor respiratory-tract infection, appeared healthy (N=60), were also investigated. Most (86%) of the cases of NCC had presented with focal seizures. Analysis of antibody response indicated that the optimum threshold titres for seropositivity were 1:800 for the ELISA and 1:6400 for the dot-blot assays. When used with these thresholds, the ELISA gave a sensitivity, specificity, positive and negative predictive values and diagnostic efficacy of 89%, 81%, 79%, 90%, 85%, respectively. The corresponding values for the dot-blot assay were similar, at 89%, 73%, 72.5%, 89%, 82%, respectively. Both assays were more sensitive, in the detection of the specific antibody response, when used among the paediatric cases of NCC who had multiple brain lesions (100%) than when used among the single-lesion cases (87%). As the ELISA gave higher specificity and diagnostic efficacy than the dot-blot assay, it should be considered the better method for the serological confirmation of NCC in children. Publication Types: Evaluation Studies PMID: 16417712 [PubMed - indexed for MEDLINE]

85.

Taenia solium cysticerci synthesize androgens and estrogens in vitro.

Valdez RA, Jimenez P, Cartas AL, Gomez Y, Romano MC. Departamento de Fisiologia, Biofisica y NC, CINVESTAV, 14-740, 07000, Mexico, DF, Mexico, mromano@fisio.cinvestav.mx.

Cysticerci from Taenia solium develop in the pig muscle and cause severe diseases in humans. Here we report on the capacity of T. solium cysticerci to synthesize sex steroid hormones. T. solium cysticerci were dissected from infected pork meat. Parasites were incubated for different periods in culture media plus antibiotics and tritiated steroid precursors. Blanks and parasite culture media were extracted and analyzed by thin-layer chromatography (TLC) in two different solvent systems. In some experiments, the scolecies were incubated separately. Results showed that T. solium cysticerci transform [(3)H]androstenedione to [(3)H]testosterone in a time-dependent manner. The production was confirmed in two different solvent systems. The incubation with [(3)H]testosterone yielded only small amounts of [(3)H]androstenedione. The recrystallization procedure further demonstrated that the metabolite identified by TLC was testosterone. The isolated scolecies incubated in the presence of [(3)H]androstenedione yielded [(3)H]testosterone and small quantities of [(3)H]17beta-estradiol. The results reported here demonstrate that T. solium cysticerci have the capacity to synthesize steroid hormones.
PMID: 16416116 [PubMed - in process]
Histological analysis of lesions of the pineal region: a retrospective study of 12 years.

Kumar P, Tatke M, Sharma A, Singh D. Department of Pathology, G.B. Pant Hospital, New Delhi 110002, India.

Various types of tumors and non-tumor lesions arise in the pineal region. This study summarizes the experience the authors have gained with 54 lesions of the pineal region over the last 12 years. Histology was analyzed in all cases. Out of these 54 cases, four were non-tumor lesions. Of the 50 tumors, pineal parenchymal tumors (PPTs) were most common (42% (21/54)), followed by gliomas (40% (20/54)). The PPTs were pineoblastomas (10/21), PPT of intermediate differentiation (7/21), and pineocytomas (4/21). The other tumors included germ cell tumors (4/54), meningiomas (2/54), craniopharyngiomas (2/54), and choroid plexus papilloma (1/54). The non-tumor lesions were epidermoid cysts (2/54), tuberculous abscess (1/54), and cysticercosis (1/54). Immunohistologically, all the PPTs showed cytoplasmic positivity for synaptophysin. Glial fibrillary acidic protein (GFAP) stained only the reactive astrocytes in these tumors except two cases of pineoblastoma, which showed GFAP positivity in some tumor cells, indicating glial differentiation. There are very few studies of pineal lesions, and there is no study from India in the indexed literature.

PMID: 16413691 [PubMed - indexed for MEDLINE]

Efficacy of a 3-day course of albendazole treatment in patients with a single neurocysticercosis cyst.

Bustos JA, Pretell EJ, Llanos-Zavalaga F, Gilman RH, Del Brutto OH, Garcia HH; Cysticercosis Working Group in Peru. Cysticercosis Unit, Instituto de Ciencias Neurologicas, Lima, Peru.

PMID: 16412842 [PubMed - indexed for MEDLINE]
Solitary fourth ventricular neurocysticercosis presenting as status migrainosus.

Shukla R, Paliwal VK, Jha D.

Fourth ventricular cysts in patients with neurocysticercosis are generally solitary without accompanying parenchymal cysts and hence present with hydrocephalic symptoms at the time of implantation. We report a patient with status migrainosus-like presentation in whom the neurological examination was normal and the diagnosis was made by imaging (CT and MRI scan).


An epidemiologic survey was carried out on 110,144 people from the Health Family Program to evaluate some Epidemiologic aspects of teniasis. Previous history of passing proglottides was registered in 185 (0.2%) of them, and 112 (60.5%) received praziquantel. After this 97 (86.6%) passed proglottides characterized as Taenia Saginata and Taenia Solium in 36 (37.1%) and 4 (4.1%) respectively.

PMID: 16410933 [PubMed - indexed for MEDLINE]

Evaluation of the efficacy of albendazole sulphone and praziquantel in combination on Taenia crassiceps cysts: in vitro studies.

OBJECTIVES: Praziquantel and albendazole are currently used for chemotherapeutic treatment of neurocysticercosis. Albendazole has been found to be more effective than praziquantel; however, it is well known that not all patients will show a complete resolution of cysts. Searching for more effective treatments, this study was designed to evaluate the effect of the combination of praziquantel and albendazole sulphoxide in a Taenia crassiceps in vitro model as well as the kind of interaction between both drugs. METHODS: In order to determine the concentration that produced 50% effect (EC50), T. crassiceps cysts were incubated in culture medium containing praziquantel (0.005-0.04 microg/mL), albendazole sulphoxide (0.021-0.16 microg/mL) or the combination of praziquantel and albendazole sulphoxide in a fixed-dose ratio (1:1). The experimental concentration (EC50Exp) of the combination was determined from the concentration-response curve constructed from the combined drug treatment. Isobolographic analyses were used to define the nature of the interaction between praziquantel and albendazole sulphoxide. Morphological and ultrastuctural alterations after different treatments over the parasite tissue were observed by light and transmission electron microscopy. RESULTS: The changes in ultrastructure were more marked with the praziquantel and albendazole sulphoxide combination. Also the cysticidal effect of the combination was observed earlier than that of each drug alone. When isobolographic analysis was employed, we found that the experimental EC50 value (0.042 microg/mL) was not significantly different from the theoretical EC50 value (0.035 microg/mL), which indicates an additive interaction between praziquantel and albendazole sulphoxide. CONCLUSIONS: Our study suggests that the combination of praziquantel and albendazole sulphoxide could potentially improve the current neurocysticercosis treatment.

PMID: 16410266 [PubMed - indexed for MEDLINE]

91.
A case of intramuscular cysticercosis diagnosed definitively by mitochondrial DNA analysis of extremely calcified cysts.


A case of obsolete intramuscular cysticercosis diagnosed definitively by mitochondrial DNA analysis of extremely calcified cysts was reported. X-ray and computed tomography findings highly suggested cysticercosis due to Taenia solium; however, no direct evidence of cysticercosis was obtained through serological or histopathological examinations. Mitochondrial DNA analysis of a histopathological specimen confirmed the causative agent to be the Asian genotype of T. solium.
PMID: 16406683 [PubMed - in process]
Breakdown of the blood brain barrier and blood-cerebrospinal fluid barrier is associated with differential leukocyte migration in distinct compartments of the CNS during the course of murine NCC.

Alvarez JI, Teale JM. Department of Microbiology and Immunology, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78229-3900, USA.

Brain homeostasis is normally protected by the blood brain barrier (BBB) and the blood-cerebrospinal fluid barrier (BCB), barriers that function in distinct CNS compartments and consist of different types of blood vessels including pial (subarachnoid spaces, leptomeninges), parenchymal (cerebral cortex) and ventricular vessels. In this study, a mouse model of neurocysticercosis was used to distinguish between changes in the permeability of the BBB and the BCB and determine the association of such alterations on leukocyte infiltration. Mice were intracranially infected with the parasite Mesocestoides corti and sacrificed at various times post infection. Different anatomical areas of infected brain were analyzed by three color immunofluorescence utilizing antibodies against serum proteins to assess brain barrier permeability, glial fibrillary acidic protein (GFAP) to detect astrocytes, and specific cell surface markers to determine the subpopulations of leukocytes infiltrating the CNS at particular sites. The results indicate increased permeability of all three types of vessels/structural sites as a result of infection evidenced by serum proteins and leukocyte extravasation but with considerable differences in the timing and extent of these permeability changes. Parenchymal vessels were the most resilient to changes in permeability whereas pial vessels were the least. Choroid plexus vessels of the ventricles also appeared less susceptible to increased permeability compared with pial vessels. In addition, parenchymal vessels appeared impermeable to particular types of immune cells even after extended periods of infection. Additionally, alterations in reactive astrocytes juxtaposed to blood vessels that exhibited increased permeability displayed increased expression of cytokines known to regulate brain barrier function. The results suggest that access of leukocytes and serum derived factors into the infected brain depend on several parameters including the anatomical area, type of vascular bed, cell phenotype and cytokine microenvironment.

PMID: 16406118 [PubMed - in process]
Serum and cerebrospinal fluid S100B concentrations in patients with neurocysticercosis.

Lima JE, Walz R, Tort A, Souza D, Portela L, Bianchin MM, Takayanagui OM, Leite JP. Departamento de Neurologia, Faculdade de Medicina de Ribeirao Preto, Universidade de Sao Paulo, Ribeirao Preto, SP, Brazil.

The clinical manifestations of neurocysticercosis (NC) are varied and depend on the number and location of cysts, as well as on the host immune response. Symptoms usually occur in NC when cysticerci enter a degenerative course associated with an inflammatory response. The expression of brain damage markers may be expected to increase during this phase. S100B is a calcium-binding protein produced and released predominantly by astrocytes that has been used as a marker of reactive gliosis and astrocytic death in many pathological conditions. The aim of the present study was to investigate the levels of S100B in patients in different phases of NC evolution. Cerebrospinal fluid and serum S100B concentrations were measured in 25 patients with NC: 14 patients with degenerative cysts (D), 8 patients with viable cysts (V) and 3 patients with inactive cysts. All NC patients, except 1, had five or less cysts. In most of them, symptoms had been present for at least 1 month before sample collection. Samples from 8 normal controls (C) were also assayed. The albumin quotient was used to estimate the blood-brain barrier permeability. There were no significant differences in serum (P = 0.5) or cerebrospinal fluid (P = 0.91) S100B levels among the V, D, and C groups. These findings suggest that parenchymal changes associated with a relatively small number of degenerating cysts probably have a negligible impact on glial tissue.

PMID: 16400473 [PubMed - in process]

Taenia solium taeniasis and cysticercosis in three communities in north Vietnam.

Somers R, Dorny P, Nguyen VK, Dang TC, Goddeeris B, Craig PS, Vercruysse J. Laboratory of Parasitology, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium.

OBJECTIVES: (1) To investigate the response to a serum antigen-detecting ELISA for cysticercosis and a stool coproantigen test for taeniasis in two rural communities (mountainous and coastal areas) and one group of (peri-)urban factory workers; and (2) to examine clinical features of human cysticercosis in northern Vietnam. METHODS: Villagers and factory workers and their families
were informed and invited to participate in the study. Blood and faecal samples were collected from the participants and a simple questionnaire on taeniasis/cysticercosis completed. Serum was examined for the presence of circulating cysticercus antigen by a monoclonal-based sandwich ELISA. Ag-ELISA positive persons underwent a clinical examination and a computed tomography (CT) scan. Stool samples were examined microscopically for the presence of Taenia eggs and for copro-antigens. Tapeworms were identified following therapeutic expulsion using morphology and PCR-RFLP. RESULTS: Circulating cysticercus antigens, suggesting active infection, were detected in 5.3% (16/303), 0.6% (1/175) and 0.0% (0/229) of the sampled individuals from the mountainous, coastal and urban regions, respectively. Clinical examination and CT scan of the cysticercus antigen positive persons showed that active cysticercosis did not cause severe disease in most cases. Taenia copro-antigens were found in 0.3% (1/297), 1.8% (3/166) and 0.0% (0/228) of the stool samples from the mountainous, coastal and urban communities, respectively. Three tapeworms were expelled after treatment: two Taenia solium and one Taenia saginata. CONCLUSION: This survey points to a focal distribution of taeniasis/cysticercosis and suggests that human cysticercosis is rather acquired due to close contact with a T. solium carrier and self-infection, than through infection from the environment.

PMID: 16398757 [PubMed - indexed for MEDLINE]

95.

Genotoxicity of vesicular fluid and saline extract of Taenia solium metacestodes in somatic cells of Drosophila melanogaster.

Silva LP, Costa-Cruz JM, Spano MA, Graf U. Institute of Biomedical Science, Federal University of Uberlandia, Uberlandia (MG), Brazil.

Neurocysticercosis, the most common parasitic disease of the central nervous system, is caused by cysticerci of the helminth Taenia solium, which is prevalent in developing countries and is reemerging in affluent societies. This helminth is associated with brain tumors and hematological malignancies in humans. In the present study, we analyzed the genotoxicity of vesicular fluid (VF) and a saline extract (SE) of T. solium metacestodes in the Drosophila melanogaster wing somatic mutation and recombination test (SMART). Third-instar larvae derived from standard and high bioactivation crosses were treated for approximately 48 hr with 12.5, 25.0, and 50.0 microg/ml of VF and SE of T. solium metacestodes. Negative (phosphate buffered saline) and positive (10 mM urethane) controls were also included. The results showed that the two test compounds were genotoxic in both crosses of Drosophila. Nevertheless, further research is needed to determine the genotoxic potential of specific compounds present in VF and SE and their role in the development of cancer. Copyright (c) 2006 Wiley-Liss, Inc.
PMID: 16395698 [PubMed - in process]

Progress in diagnosis, treatment and elimination of echinococcosis and cysticercosis.

Schantz PM. Division of Parasitic Diseases, Coordinating Center for Infectious Diseases, Centers For Disease Control and Prevention, Atlanta, GA 30341, USA. pschantz@cdc.gov

Here I review the current status of geographical occurrence and public health significance of echinococcosis (Echinococcus spp. infections) and cysticercosis (Taenia solium infection) with special emphasis on the remarkable technologic progress achieved in recent decades that has led to greater understanding of the biology and epidemiology of these cestode infections. The greatest remaining challenges are to apply this knowledge and technology to improved medical management and prevention of these infections.

Publication Types: Review PMID: 16386944 [PubMed - indexed for MEDLINE]


Neocortical epilepsy: aspects distinguishing intractable from benign neocortical epilepsies.

Martin del Campo JC. University Health Network, University of Toronto, Toronto, Ontario, Canada.

Publication Types: Review PMID: 16383120 [PubMed - indexed for MEDLINE]


Albendazole trial at 15 or 30 mg/kg/day for subarachnoid and intraventricular cysticercosis.

Thirty-six patients with subarachnoid and intraventricular cysticercosis were randomly assigned to receive albendazole at 15 or 30 mg/kg/day plus dexamethasone for 8 days. Results favored a higher dose, with larger cyst reduction on MRI at 90 and 180 days and higher albendazole sulfoxide levels in plasma. An albendazole course at 30 mg/kg/day combined with corticosteroids is safe and more effective than the usual dose. A single treatment was insufficient in intraventricular and giant cysts.

Publication Types: Randomized Controlled Trial PMID: 16382035 [PubMed - indexed for MEDLINE]

99.

Challenges for control of taeniasis/cysticercosis in Indonesia.

Suroso T, Margono SS, Wandra T, Ito A. Directorate General Communicable Disease Control and Environmental Health, Ministry of Health, Indonesia. suroso2002@cbn.net.id

Taeniasis/cysticercosis has been reported from several provinces of Indonesia: Papua (=former Irian Jaya), Bali, North Sumatra, East Nusa Tenggara, South East Sulawesi, Lampung, North Sulawesi, Jakarta, West Kalimantan, and East Java. The highest level of endemicity of taeniasis/cysticercosis has been found in Papua. Recent surveys in Jayawijaya District of Papua in 2000 and 2001 showed that 5 of 58 local people (8.6%) harbored the adult tapeworm, Taenia solium, whereas 44 of 96 people (45.8%), 50 of 71 pigs (70.4%), and 7 of 64 local dogs (10.9%) were seropositive for T. solium cysticercosis. Current surveys in Bali and Samosir District, North Sumatra during 2002-2005 revealed that Taenia saginata taeniasis has increased in incidence whereas T. solium cysticercosis is now rather rare compared to one-two decades ago in Bali. Taenia asiatica taeniasis is still common in Samosir District. Data from other provinces of Indonesia are very limited or unavailable. Control of these diseases is not a priority in the health or veterinary services, neither at central or local government levels. However, limited efforts toward control of the diseases have been implemented such as training of health personnel, community education on disease prevention, and provision of anthelmintics. A working group for control of the disease in Indonesia and an international collaboration have been established among Ministry of Health, Indonesia; University of Indonesia; and Asahikawa Medical College, Asahikawa, Japan since 1996. Future goals include implementation of active case finding (active surveillance) and treatment of tapeworm carriers, sustainable public health education, establishment of a system to check the quality of beef/pork and determine the distribution of infected animals and strengthening of laboratory capacity. Efforts to motivate provinces and districts should be implemented in developing the strategic plan to control of the disease. Given the considerable
differences in cultures, religions, levels of education, socio-economic levels, daily habits and behaviour etc., control programmes must be adapted to the local situations.

Publication Types: Review PMID: 16380290 [PubMed - indexed for MEDLINE]

100.

Taeniasis/cysticercosis in Papua (Irian Jaya), Indonesia.

Margono SS, Wandra T, Swasono MF, Murni S, Craig PS, Ito A. Department Research and Community Service, University of Indonesia. margonofk@yahoo.com

Reports showed that an important parasitic zoonotic disease caused by Taenia solium, Taenia saginata and Taenia asiatica is found endemic in several areas of Indonesia including Papua, Bali and North Sumatra. At present it is known that the highest prevalence of taeniasis/cysticercosis in Indonesia, caused by T. solium is among the indigenous communities in Papua (formerly Irian Jaya). In the early 1970s, 8-9% of stool samples from the Enarotali hospital, Paniai District (Irian Jaya) were found positive with Taenia eggs. The samples were from members of the Ekari (Kapauku) ethnic group. Stool samples from the Moni ethnic group, living east of surrounding lakes, were egg negative. Cysticerci of T. solium were discovered in pigs. During the years 1973-1976 cases of burns increased and were ultimately found to be primarily associated with epileptic seizures induced by neurocysticercosis cases. Among 257 cases of burns, 88 cases (62.8%) were suffering from epileptic seizures before or during hospitalization. In the year 1981 T. solium seropositive persons were mostly (16%) found in the endemic Obano village. In 1997 the parasite was discovered in Jayawijaya District, which is located approximately 250 km east of Paniai District. During 1991-1995, a local health center in Assologaima, Jayawijaya District reported 1120 new cases with burns and a further 293 new cases of epileptic seizures among 15,939 inhabitants. The histopathologic appearance and mitochondrial DNA analysis found the cysts to be similar to those of T. solium from other regions of the world. Sensitive and specific serological diagnostic methods were used and improved. Cysticerci were detected in dogs, as well as in pigs. A coproantigen test for detection of adult tapeworms in patients was carried out. Medical treatment with praziquantel for taeniasis and albendazole for cysticercosis (with prednisone and sodium phenytoin treatment in cases with neurocysticercosis) was undertaken. Lifestyle, religion, and socioeconomic aspects are important issues in the perpetuation and enhancing the endemicity of T. solium taeniasis and cysticercosis in Papua, Indonesia.

Publication Types: Review PMID: 16376603 [PubMed - indexed for MEDLINE]
It has been reported that three human Taenia species are distributed in Indonesia: Taenia solium, Taenia asiatica and Taenia saginata. T. asiatica is well known in North Sumatra, especially on Samosir island in Lake Toba. T. solium and T. saginata are known from Bali. T. solium is most serious public health issue in Papua (former Irian Jaya). In this report, we briefly review the present situation of these three human Taenia species mainly in Bali and North Sumatra. For community based epidemiological survey, we have adopted and applied questionnaire, microscopic observation of eggs, coproantigen tests, coproDNA tests, mitochondrial DNA analysis and morphology for isolated specimens, serology for cysticercosis and taeniasis. For detection of taeniasis cases of both T. saginata and T. asiatica, questionnaire by expert doctors is perfect to detect worm carriers. Coproantigen test developed for detection of taeniasis of T. solium is also highly reliable to detect taeniasis carriers in the community. Epidemiological data from these two islands 2002-2005 are reviewed with backgrounds of historical culture, religions and customs. Publication Types: · Review PMID: 16376140 [PubMed - indexed for MEDLINE]
Molecular diagnosis for taeniasis and cysticercosis in humans on the basis of mitochondrial DNA analysis was reviewed. Development and application of three different methods, including restriction fragment length polymorphism analysis, base excision sequence scanning thymine-base analysis and multiplex PCR, were described. Moreover, molecular diagnosis of cysticerci found in specimens submitted for histopathology and the molecular detection of taeniasis using copro-DNA were discussed.

Publication Types:- Review - PMID: 16360337 [PubMed - indexed for MEDLINE]

104.
Related Articles, Links
Role of chemotherapy of taeniasis in prevention of neurocysticercosis.

Pawlowski ZS. Clinic of Parasitic and Tropical Diseases, University of Medical Sciences, Poznan, Poland. Zpawlows@am.poznan.pl

Neurocysticercosis (NC) is a serious public health problem in Taenia solium endemic areas and in some immigrants and international travelers. A key intervention in preventing NC is elimination of taeniasis by chemotherapy. Currently, two safe and effective taenicides, namely niclosamide and praziquantel, are available. Both are on WHO Essential Drug list, but are often inaccessible in T. solium endemic areas. Natural remedies, still widely used in some endemic areas, are frequently carcinogenic or highly toxic and as such should be discontinued. Chemotherapeutic intervention to control T. solium taeniasis/cysticercosis, whilst theoretically feasible, has several practical obstacles. These include poor public awareness, problems with diagnosing Taenia carriers, poor availability of taenicides where needed and low priority afforded to the control of NC. These can be overcome, respectively, by effective health education, wider use of newly developed coproantigen tests, strengthening of health services infrastructure and essential drugs distribution, and increasing the priority given to prevention of NC, as a leading cause of epilepsy in T. solium endemic areas. Information is accumulating on rational approaches to population-based short-term chemotherapeutic control measures. These are: widely available modern diagnostic tools and taenicides, treatment of any case of taeniasis, confirmed or probable, focus-oriented chemotherapy, irrespective of Taenia species implicated, improved sanitation, cooperation of veterinary and medical services, linkage with programs against epilepsy and cooperation of better educated communities. Now, it remains to take an advantage of existing tools and experience.


Genetic variation in Taenia solium.

Campbell G, Garcia HH, Nakao M, Ito A, Craig PS. Cestode Zoonoses Research Group, Bioscience Research Institute and School of Environment and Life Sciences, Salford University, UK. sulfured103@yahoo.co.uk

Neurocysticercosis is a major zoonotic larval cestode infection that has a worldwide distribution and is of significant public health importance. Knowledge of the genetic structure of Taenia solium can be applied to the epidemiology and transmission of this disease, since genetic variants may differ in infectivity and pathogenicity. Molecular epidemiological approaches can also enable detailed studies of transmission. On a global scale, mitochondrial markers have differentiated between T. solium isolates from Asia and isolates from Africa/Latin America. Intraspecific variation in T. solium has been detected to some extent, using RAPD markers to differentiate between T. solium populations from different regions within Mexico. Markers currently available for T. solium have not been used to analyse genetic variation at the community or local level. The development of highly polymorphic markers such as microsatellites in T. solium can provide the means to examine genetic heterogeneity of tapeworm infection at the household, community and regional level. Preliminary studies suggest it is possible to analyse population genetic variation in communities using a range of polymorphic markers.

Publication Types:- Review - PMID: 16352464 [PubMed - indexed for MEDLINE]


Laboratory animal models for human Taenia solium.


Human beings are the only hosts of adult Taenia solium; thus, many aspects of the host-parasite relationship are unknown. The development of successful experimental models of taeniasis allows in-depth investigations of the host-parasite relationship. We established experimental models in hamsters, gerbils and chinchillas. Here we review our findings regarding the characteristics of the tapeworms, their anchoring site and development, as well as the humoral and cellular immune response they elicit. We also used statistics to analyze the data.
obtained in different infections performed along several years. Furthermore, we compared the size of T. solium rostellum and strobila recovered from hamsters and gerbils to those obtained from humans. Our data indicate that these rodents are adequate experimental models for studying T. solium in its adult stage; that parasites induce immune responses and that hamsters seem to be more permissive hosts than gerbils, since parasites survive for longer times, grow longer and develop more, and the inflammatory response in the intestinal mucosa against T. solium is moderate. Finally, chinchillas are the most successful experimental definitive model for adult T. solium, since tapeworms with gravid proglottids are obtained, and the life cycle can be continued to the intermediate host.

Recombinant antigens for serodiagnosis of cysticercosis and echinococcosis.

Sako Y, Nakao M, Nakaya K, Yamasaki H, Ito A. Department of Parasitology, Asahikawa Medical College, Japan. yasusako@asahikawa-med.ac.jp

Diagnosis of cysticercosis/echinococcosis is primarily based on imaging techniques. These imaging techniques are sometimes limited by the small size of visualized lesions and atypical images, which are difficult to be distinguished from abscesses or neoplasms. Therefore, efforts have been directed toward identification and characterization of specific antigens of parasites for development of serodiagnostic method that can detect specific antibody. For cysticercosis, glycoproteins of 10-26 kDa in cyst fluid of Taenia solium have been widely accepted for serodiagnosis purpose. The glycoproteins consist of a very closely related family of 8-kDa proteins. We identified four genes (designated Ag1, Ag1V1, Ag2 and Ag2V1) encoding the 7- and 10-kDa polypeptides. Based on the antigenicities of these clones, Ag1V1 and Ag2 were chosen as ELISA antigens and the Ag1V1/Ag2 chimeric protein was expressed. The Ag1V1/Ag2 chimeric protein showed the similar sensitivity and specificity as the native glycoproteins. For alveolar echinococcosis, the 65-kDa protein of Echinococcus multilocularis protoscolices and Em18 has been considered as serodiagnostic antigens. The sensitivity and specificity of Em18 are very compatible to those of the recombinant 65-kDa protein. Recently, we demonstrated that Em18 was the proteolytic product of the 65-kDa protein following the action by cysteine proteinases. From the information of N-terminal amino acid sequences, molecular size and isoelectric point of Em18, recombinant Em18 ((349)K to (508)K of the 65-kDa protein, RecEm18) was expressed and evaluated for serodiagnostic value. RecEm18 has the potential for use in the differential serodiagnosis of alveolar echinococcosis.
Transmission dynamics of *Taenia solium* and potential for pig-to-pig transmission.

Gonzalez AE, Lopez-Urbina T, Tsang B, Gavidia C, Garcia HH, Silva ME, Ramos DD, Manzanedo R, Sanchez-Hidalgo L, Gilman RH, Tsang VC; The cysticercosis working group in Peru. School of Veterinary Medicine, Universidad Nacional Mayor de San Marcos, Lima, Peru. agonzale@jhsph.edu

*Taenia solium* taeniasis/cysticercosis is one of few potentially eradicable infectious diseases and is the target of control programs in several countries. The larval stage of this zoonotic cestode invades the human brain and is responsible for most cases of adult-onset epilepsy in the world. Our current understanding of the life cycle implicates humans as the only definitive host and tapeworm carrier, and thus the sole source of infective eggs that are responsible for cysticercosis in both human and pigs through oral-faecal transmission. Here we review transmission dynamics of porcine cysticercosis including an alternative pig-to-pig route of transmission, previously not suspected to exist. Second-hand transmission of *T. solium* eggs could explain the overdispersed pattern of porcine cysticercosis, with few pigs harbouring heavy parasite burdens and many more harbouring small numbers of parasites.

The molecular mechanisms of larval cestode development: first steps into an unknown world.

Brehm K, Spiliotis M, Zavala-Gongora R, Konrad C, Frosch M. Institute of Hygiene and Microbiology, University of Wurzburg, Germany. kbrehm@hygiene.uni-wuerzburg.de

Several hundred million years ago, the free-living ancestors of all extant helminth parasites decided to colonize entirely new habitats, the bodies of other metazoan animals. As a consequence of the resulting adaptation processes, they evolved highly complex life-cycles in which many developmental transitions were initiated and controlled by host-derived signals. Understanding the molecular basis of the original developmental mechanisms, and the modifications that occurred during co-evolution with the host, is not only fundamental to our understanding of parasitism but also highly relevant for the design of anti-parasitic drugs and vaccines. In the past several years, molecular investigations on parasitic nematode and trematode development have made considerable progress and, supported by respective
genome sequencing projects and emerging methods of genetic manipulation, will be a flourishing field in the years to come. We consider it time that corresponding studies are also pushed for the third large group of parasitic helminths, thecestodes. Here, we review the first experimental steps into that area, which have been undertaken recently. We report on cestode genomics, the identification ofsignaling factors associated with larval development, and the establishment as well as improvement of in vitro cultivation systems by which cestode life-cycles can be studied in the laboratory.

PMID: 16343987 [PubMed - indexed for MEDLINE]

110.

Veterinary public health activities at FAO: cysticercosis and echinococcosis.

Eddi C, Katalin de B, Juan L, William A, Andrew S, Daniela B, Joseph D. Animal Health Service, Animal Production and Health Division, FAO, 00100, Italy. Carlos.Eddi@fao.org

In many developing and transition countries, parasitic zoonoses such ascysticercosis and echinococcosis cause serious human suffering and considerable losses in agricultural and human productivity, thus posing a significant hindrance to their development. Although, effective and reliable tools for the diagnosis, prevention and control of parasitic zoonoses are now available, their implementation has not always been successful in many countries. This is primarily due to the lack of awareness on the presence or impact of the causing parasites (Taenia saginata, Taenia solium and Echinococcus spp.). In addition, often the needed intersectorial cooperation, resource management and political commitment for their control are (also) absent. FAO's regular programme has established a global network of professionals directly involved in zoonotic and food-borne diseases. The network provides a basic framework for the spread of information related to the diagnosis, prevention and control of major zoonotic diseases including cysticercosis and echinococcosis.

Publication Types:- Review -PMID: 16343986 [PubMed - indexed for MEDLINE]

111.
Parasitol Int. 2006;55 Suppl:S1-308. Epub 2005 Dec 15. Related Articles, Links


[No authors listed]
Usefulness of severe combined immunodeficiency (scid) and inbred mice for studies of cysticercosis and echinococcosis.

Nakaya K, Mamuti W, Xiao N, Sato MO, Wandra T, Nakao M, Sako Y, Yamasaki H, Ishikawa Y, Craig PS, Schantz PM, Ito A. Animal Laboratory for Medical Research, Asahikawa Medical College, Hokkaido, Japan. nky48@asahikawa-med.ac.jp

The topics in this review are the usefulness of immunodeficient and inbred mice for studies of developmental biology, drug efficacy and host specificity in cysticercosis and echinococcosis. In non-obese diabetic severe combined immunodeficiency (NOD/Shi-scid) mice of both sexes, in vitro hatched oncospheres of all three human taeniid species (Taenia solium, Taenia saginata and Taenia asiatica) developed into cysticerci comparable to or bigger than those developed in their known intermediate host animals, whereas only females were susceptible to these infections in other scid mice of BALB/c, C57BL or C.B-17 inbred strains. Detailed morphological observation from post-oncospheral to cysticercus developmental stages is expected to be easy when we use NOD/Shi-scid mice experimentally inoculated with in vitro hatched oncospheres. Metacestocidal effect of oxendazole was evaluated in NOD/Shi-scid mice experimentally inoculated with oncospheres of T. solium. In Echinococcus multilocularis infection, larval tissue proliferated without induction of inflammatory host responses in scid mice, thus facilitating isolation of the larval vesicles and protoscoleces for biochemical and molecular biological studies. Trans portal inoculation of metacestode tissues resulted in proliferation of secondary echinococcal foci localized exclusively in the liver without metastasis to other tissues or organs. The advantages of a mouse model for Echinococcus granulosus are also described.

Taeniasis, cysticercosis and echinococcosis in Thailand.

Waikagul J, Dekumyoy P, Anantaphruti MT. Department of Helminthology, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand. tmjwk@mahidol.ac.th
Taeniasis is one of the major food-borne parasitic zoonoses in Thailand. During the years 1957-1997, the prevalence was low in most parts of the country. Recent (2000-2005) country prevalence was lower than 1%. A high prevalence (5.9%) was found among 1450 villagers from 30 villages in the North, and among 1233 stool samples from 19 provinces in the Northeast (2.8%). Taenia saginata was the dominant species. Cysticercosis in Thailand is somewhat under-reported/recorded. During the period 1965-2005, diagnosis was based on techniques other than serodiagnosis, giving a total of cysticercosis cases of less than 500. However, an immunoblot technique using delipidized cyst antigen showed 314 positive cases out of 754 samples tested in 2000-2005. Reports of neurocysticercosis appeared more often than cutaneous cysticercosis. A total of 24 cases of echinococcosis, mostly hydatid cysts (only 2 cases of alveolar cysts), were recorded during 1936-2005. These records included 3 cases of foreigners seeking surgery in hospitals in Bangkok. Most Thai patients were migrant workers from the Middle East, and only a few cases were indigenous. The prevalence of cysticercosis and echinococcosis is increasing resulting from sensitive modern diagnostic tests. Taeniasis will persist in Thailand as the consumption of raw/half-cooked meat dishes is still a normal practice for Thai people.


114.

Current status of Taenia solium and cysticercosis in Papua New Guinea.
Owen IL.

C/o National Agriculture Quarantine and Inspection Authority, Papua New Guinea.
iowen@datec.net.pg

There is no evidence that taeniasis due to Taenia solium is present in Papua New Guinea (PNG), but there is some serological evidence that human cysticercosis exists at particular locations near the border with West Papua (Indonesia), where refugees from across the border have been settled. Only a few surveys have been conducted; the first was in 1986, when one refugee who originated from an infected locality in West Papua was found to be serologically positive, but asymptomatic. Subsequently, there have been unpublished reports of more positive but asymptomatic cases amongst refugees and, it is claimed, amongst local inhabitants that live near the border. A serological survey conducted in PNG in 1999 at the southern end of the border revealed no positive cases of cysticercosis. There are no reports of pigs or dogs affected with cysticercosis in PNG.


Brief historical remarks as an introduction for the international symposium on taeniasis/cysticercosis and echinococcosis.

Ito A. Department of Parasitology, Asahikawa Medical College, Japan. akiraito@asahikawa-med.ac.jp

Some historical remarks are made on the background information leading to the international symposium on taeniasis/cysticercosis and echinococcosis with focus on Asia and the Pacific.
PMID: 16337830 [PubMed - indexed for MEDLINE]


The genome project of Taenia solium.


We have constituted a consortium of key laboratories at the National Autonomous University of Mexico to carry out a genomic project for Taenia solium. This project will provide powerful resources for the study of taeniasis/cysticercosis, and, in conjunction with the Echinococcus granulosus and Echinococcus multilocularis genome project of expressed sequence tags (ESTs), will mark the advent of genomics for cestode parasites. Our project is planned in two consecutive stages. The first stage is being carried out to determine some basic parameters of the T. solium genome. Afterwards, we will evaluate the best strategy for the second stage, a full blown genome project. We have estimated the T. solium genome size by two different approaches: cytofluorometry on isolated cyton nuclei, as well as a probabilistic calculation based on approximately 2000 sequenced genomic clones, approximately 3000 ESTs, resulting in size estimates of 270 and 251 Mb, respectively. In terms of sequencing, our goal for the first stage is to characterize several thousand ESTs (from adult worm and cysticerci cDNA libraries) and genomic clones. Results obtained so far from about 16,000 sequenced ESTs from the adult stage, show that only about 40% of the T. solium coding sequences have a previously sequenced homologue. Many of the best hits are found with
mammalian genes, especially with humans. However, 1.5% of the hits lack homologues in humans, making these genes immediate candidates for investigation on pharmaco-therapy, diagnostics and vaccination. Most T. solium ESTs are related to gene regulation, and signal transduction. Other important functions are housekeeping, metabolism, cell division, cytoskeleton, proteases, vacuolar transport, hormone response, and extracellular matrix activities. Preliminary results also suggest that the genome of T. solium is not highly repetitive.


Taeniasis/cysticercosis trend worldwide and rationale for control.

Montresor A, Palmer K. Vectorborne and Other Parasitic Diseases, WHO, Hanoi, Vietnam. montresora@vtn.wpro.who.int

Pig production has increased significantly worldwide in recent years. Small-scale pig husbandry has become a popular source of income in rural and resource-poor communities in most of developing countries. A parallel increase of human Taenia carrier and human cysticercosis is expected but detailed data are not available. However, Taenia solium is considered responsible for over 10% of acute case admission to the neurological ward of countries where it is endemic. The control strategy that seems at the moment more promising is a combination of the different tools available and includes the identification of areas at high risk and the presumptive treatment of the suspected cases and their families. This active finding and treatment of probable tapeworm carriers should be accompanied by health education and control swine cysticercosis. WHO invites all endemic countries to recognize the importance of taeniasis/cysticercosis control and to collect epidemiological data and to adopt policies and strategies for its control.


Where are the tapeworms?

Flisser A. Departamento de Microbiologia y Parasitologia, Facultad de Medicina, UNAM, 04510 Mexico DF, Mexico. flisser@servidor.unam.mx

This review analyzes the literature in search of an answer to the fact that, in general, tapeworms are very difficult to recover. The results and comments of the
authors that have searched for Taenia solium, either to define the local prevalence
in different countries of Latin America, to assess the efficacy of cestocidal
treatment or to evaluate alternatives for controlling cysticercosis, are presented.
The difficulties in tapeworm recovery and the possible explanations for this
phenomenon are discussed.


119.

Coproantigens in taeniasis and echinococcosis.

Allan, J.C., Craig, P.S. Cestode Zoonoses Research Group, Bioscience Research
Institute University of Salford, UK. James.Allan@Pfizer.com

The application of modern immunodiagnostic or molecular diagnostic techniques
has improved the diagnosis of the taeniid cestode infections, echinococcosis and
taeniasis. One particularly promising approach is the detection of parasite-specific
antigens in faeces (coproantigens). This approach has been applied to both
Echinococcus and Taenia species and it has gained increasingly widespread use.
Taeniid coproantigen tests are based on either monoclonal or polyclonal antibodies
raised against adult tapeworm antigens. These tests have the following common
characteristics; they are largely genus-specific, specificity is high (>95%), parasite
antigen can be detected in faeces weeks prior to patency, levels of coproantigen
are independent of egg output, coproantigen is stable for days at a range of
temperatures (-80 degrees C to 35 degrees C), for several months in formalin-fixed
faecal samples, and coproantigen levels drop rapidly (1-5 days) following
successful treatment. In the genus Taenia, most work has been done on Taenia
solium and coproantigen tests have reliably detected many more tapeworm
carriers than microscopy. For Echinococcus species, there is a broad positive
 correlation between test sensitivity and worm burden with a reliable threshold level
for the test of >50 worms. Characterisation of taeniid coproantigens in order to
further improve the tests is ongoing. Studies indicate taeniid coproantigens to
include high molecular weight (>150 kDa), heavily glycosylated molecules with
carbohydrate moieties contributing substantially to the levels of antigen detected in
faeces. Application of the existing coproantigen tests in epidemiological and control
programmes for Echinococcus and Taenia species infection has begun to
contribute to an improved understanding of transmission and of surveillance of
these important zoonotic cestodes.

Publication Types: · Review PMID: 16337428 [PubMed - indexed for MEDLINE]

120.
People, pigs and parasites in New Guinea: relational contexts and epidemiological possibilities.

Dwyer PD. School of Anthropology, Geography and Environmental Studies, The University of Melbourne, Victoria, Australia. pddwyer@unimelb.edu.au

Within Papua New Guinea the relationship people have with their pigs varies between societies. These differences arise in the earliest phase of rearing piglets and result in domestic animals whose primary attachments are to other pigs, to places or to people. For Papua New Guineans, different pig management regimes fulfill ecological and social needs. In addition, however, the ways in which pigs are raised and managed, and the presence or absence of a local population of wild pigs, have consequences for the exposure of both domestic pigs and people to parasites that they may host. Effective control of disease-inducing parasites should be attentive to society-specific relationships between people and their pigs.

Publication Types: Review PMID: 16337181 [PubMed - indexed for MEDLINE]


Molecular discrimination of taeniid cestodes.

McManus DP. Molecular Parasitology Laboratory, Division of Infectious Diseases and Immunology, Australian Centre for International and Tropical Health and Nutrition, The Queensland Institute of Medical Research, Post Office Royal Brisbane Hospital. donM@qimr.edu.au

DNA approaches are now being used routinely for accurate identification of Echinococcus and Taenia species, subspecies and strains, and in molecular epidemiological surveys of echinococcosis/taeniasis in different geographical settings and host assemblages. The publication of the complete sequences of the mitochondrial (mt) genomes of E. granulosus, E. multilocularis, T. solium and Asian Taenia, and the availability of mtDNA sequences for a number of other taeniid genotypes, has provided additional genetic information that can be used for more in depth phylogenetic and taxonomic studies of these parasites. This very rich sequence information has provided a solid molecular basis, along with a range of different biological, epidemiological, biochemical and other molecular-genetic criteria, for revising the taxonomy of the genus Echinococcus and for estimating the evolutionary time of divergence of the various taxa. Furthermore, the accumulating genetic data has allowed the development of PCR-based tests for unambiguous identification of Echinococcus eggs in the faeces of definitive hosts and in the environment. Molecular phylogenies derived from mtDNA sequence comparisons of geographically distributed samples of T. solium provide molecular evidence for two genotypes, one being restricted to Asia, with the other occurring
in Africa and America. Whether the two genetic forms of T. solium differ in important phenotypic characteristics remains to be determined. As well, minor DNA sequence differences have been reported between isolates of T. saginata and Asian Taenia. There has been considerable discussion over a number of years regarding the taxonomic position of Asian Taenia and whether it should be regarded as a genotype, strain, subspecies or sister species of T. saginata. The available molecular genetic data do not support independent species status for Asian Taenia and T. saginata. What is in agreement is that both taxa are closely related to each other but distantly related to T. solium. This is important in public health terms as it predicts that cysticercosis in humans attributable to Asian Taenia does not occur, because cysticercosis is unknown in T. saginata.

Publication Types: · Review
PMID: 16337179 [PubMed - indexed for MEDLINE]

122.

Vaccines against cysticercosis and hydatidosis: foundations in taeniid cestode immunology.

Lightowlers, M.W., Veterinary Clinical Centre, University of Melbourne, Werribee, Victoria, Australia. marshall@unimelb.edu.au

Recombinant oncosphere antigens have been used in the development of effective vaccines for the prevention of cysticercosis caused by Taenia ovis, Taenia saginata, Taenia solium and hydatid disease caused by Echinococcus granulosus. These vaccines were developed utilizing information gathered from numerous researchers over some 60 years which had established many of the principals concerning immunity to taeniid cestodes in their intermediate hosts. Australian scientists, or scientists with close Australian connections, made seminal early contributions to the understanding of cestode immunology that provided the foundations for more recent application of recombinant DNA methods and the development of practical vaccines. Here, some particular contributions to the field are highlighted from Drs. Michael Gemmell, Michael Rickard, David Heath and Graham Mitchell together with a precis of the recent progress in vaccine development, particularly for prevention of cysticercosis due to T. solium.

Publication Types: · Biography · Historical Article
Personal Name as Subject: · Gemmell M, Rickard, M., Heath D, Mitchell, G.
PMID: 16337177 [PubMed - indexed for MEDLINE]

123.
Parasitol Int. 2006;55 Suppl:S111-5. Epub 2005 Dec 5. Related Articles, Links
Clinical aspects of neurocysticercosis.

Takayanagui OM, Odashima NS. Department of Neurology, Faculty of Medicine at Ribeirao Preto, University of Sao Paulo, Ribeirao Preto, Brazil. otakay@rnp.fmrp.usp.br

The clinical features of neurocysticercosis (NCC) largely depend on the number, type, size, localization and stage of development of cysticerci, as well as on the host immune response against the parasite. Seizures are widely reported to be the most common symptom, occurring in 70-90% of patients, while NCC is considered to be the main cause of late-onset epilepsy in endemic areas. When cysticerci lodge within the ventricular system, life-threatening acute intracranial hypertension secondary to hydrocephalus may develop. Cysts in the subarachnoid space may invade the Sylvian fissure and grow to large sizes (giant cysts) causing intracranial hypertension with hemiparesis, partial seizures or other focal neurological signs. Racemose cysts in the basal cisterns can cause an intense inflammatory reaction, fibrosis and progressive thickening of the leptomeninges at the base of the brain. In approximately 60% of the cases, there is an obstruction of the cerebrospinal fluid (CSF) circulation, resulting in hydrocephalus and intracranial hypertension. When hydrocephalus secondary to cysticercotic meningitis is present, the mortality rate is high (50%) and most patients die within 2 years after CSF shunting. Therefore, ventricular and basal cisternal locations are considered to be malignant forms of NCC. The diagnosis of NCC is based upon neuroimaging studies, laboratory analysis of the CSF and antibody detection in the serum. Nowadays, albendazole is considered the medication of choice for the therapy of NCC. Its main use is for symptomatic patients showing multiple viable brain parenchymal cysticerci.

Publication Types: Review PMID: 16330240 [PubMed - indexed for MEDLINE]

Related Articles, Links

Conservation of the vaccine antigen gene, TSOL18, among genetically variant isolates of Taenia solium.

Gauci CG, Ito A, Lightowlers MW. University of Melbourne, Department of Veterinary Science, 250 Princes Highway, Werribee, Vic. 3030, Australia. charlesg@unimelb.edu.au
PMID: 16298439 [PubMed - in process]

Related Articles, Links
Intrathecal synthesis of specific immunoglobulin G antibodies in neurocysticercosis: evaluation of antibody concentrations by enzyme-linked immunosorbent assay using a whole cysticercal extract and cyst vesicular fluid as antigens.

Arruda GC, Quagliato EM, Rossi CL. Department of Clinical Pathology, Faculty of Medical Sciences, State University of Campinas (UNICAMP), P.O. Box 6111, Campinas 13083-970, Sao Paulo, Brazil.

The demonstration of intrathecal antibody production has proven useful for showing the involvement of the central nervous system (CNS) in several diseases. In the present study, the intrathecal synthesis of cysticercus-specific immunoglobulin G (IgG) antibodies was investigated in 30 patients with neurocysticercosis based on calculation of the specific IgG antibody index (Al(IgG)). An Al(IgG) > or =1.5 was considered to be indicative of intrathecal antibody production. Antibody concentrations in serum and cerebrospinal fluid samples were evaluated using an enzyme-linked immunosorbent assay with 2 antigen preparations from Taenia solium cysticerci, namely, a whole cysticercal extract (TsoW) and the vesicular fluid of the parasite (TsoVF). Intrathecal, cysticercus-specific IgG antibody synthesis was observed in 21 (70%) and 23 (76.6%) patients using the TsoW and TsoVF antigens, respectively. The detection of the intrathecal synthesis of specific antibodies may be a potentially useful tool in establishing the involvement of CNS in cysticercosis.

PMID: 16290026 [PubMed - in process]

126.

A study of neurocysticercosis in the foothills of the Himalayas.

Kumar, A., Khan, S.A., Khan, S., Das, S., Anurag, Negi K.S. Department of Microbiology, the Himalayan Institute of Medical Sciences (HIMS), Jolly Grant, Dehradun, Uttaranchal 248 140, India. v_ashish2001@rediffmail.com

OBJECTIVES: The present study was planned and carried out with the aim of determining the incidence of neurocysticercosis (NCC) among patients with clinically manifested neurological disorders attending the Himalayan Institute of Medical Sciences (HIMS) hospital. METHODS: Spanning a period of 18 months, serum samples of consecutively selected patients were screened by ELISA for the presence of anti-cysticercus antibodies after obtaining a detailed history. Physical examinations were performed along with routine hematological, stool and urine tests. All patients included in the study group were also subjected to radiological investigations such as CT scan/MRI/X-ray and/or ultrasonography. RESULTS: One hundred and three new patients were selected for the study group, with a
male:female ratio of 2:1. Of these, 33 (32.0%) patients were positive for Taenia solium IgG antibodies in sera. Children in the 11-20 years age group were most affected (39.4%). Only 10 patients (30.3%) were found to be positive for ova in stool, which correlated well with the presence of multiple lesions in the central nervous system (p<0.01). Solitary lesions were more common (66.7%) than multiple lesions (33.3%) on radiological diagnosis by CT scan/MRI.

CONCLUSIONS: A high incidence of neurocysticercosis in the region reflects the endemic presence of T. solium and advocates the practice of better hygiene, cooking methods and water filtration procedures for the prevention of infection.

PMID: 16289788 [PubMed - in process]

127. Mov Disord. 2006 Feb;21(2):286-7. Related Articles, Links

Neurocysticercosis-induced hemichorea.


Extraneural cysticercosis - presenting as painless cervical swellings.

Kalra V, Seth R, Mishra D. Department of Pediatrics, All India Institute of Medical Sciences, New Delhi, India. kalra_veena@hotmail.com PMID: 16239283 [PubMed - in process]


Pleomorphism of the clinical manifestations of neurocysticercosis.

Patel R, Jha S, Yadav RK. Neurology Department, Sanjay Gandhi PGIMS, Lucknow, India.

Neurocysticercosis (NCC) remains a major public health problem in developing countries as it is the most common helminthic infection of the central nervous system. Clinical manifestations are non-specific and pleomorphic. Case reports on
uncommon presentations of NCC are few. We report six interesting cases of NCC with unusual clinical presentation that demonstrate this spectrum of pleomorphism. These include extrapyramidal disease (parkinsonism and focal dystonia), Kluver-Bucy syndrome, Weber's syndrome, dementia and cortical blindness. The clinical details and possible mechanisms for the uncommon presentations are also discussed. Thus, a high level of suspicion should be kept for NCC, especially in endemic zones and developing countries.

Publication Types: · Case Reports   Review
PMID: 16214195 [PubMed - indexed for MEDLINE]

130.
Related Articles, Links


An epidemiological survey of taeniasis/cysticercosis was carried out in one semi-urban and two urban villages in three districts of Bali, Indonesia in 2002 and 2004. In total, 398 local people from 247 families were diagnosed by anamnesis and clinical examinations, and 60 residents were suspected to be taeniasis carriers. Among 60 suspected carriers, 56 persons expelled a total of 61 taeniid adult worms after praziquantel treatment. From 398 residents, 252 stool samples were available for analysis of taeniid eggs, coproantigens or copro-DNA for identification of taeniid species, and 311 serum samples were available for detection of antibodies against Taenia solium cysticercosis. Taeniasis prevalences were highly variable among three villages (1.1-27.5%), and only one case of cysticercosis due to T. solium infection was detected. All expelled tapeworms were confirmed to be Taenia saginata by mtDNA analysis. There was no Taenia asiatica human case in Bali. Case control analysis of 106 families chosen at random from 179 families in 2004 and another 106 families from non-endemic areas revealed that risk factors of T. saginata taeniasis for families were: level of education (P<0.01); consumption of beef lawar (P<0.01); and the source of lawar (P<0.01).
PMID: 16199069 [PubMed - in process]

131.
Related Articles, Links
Positive reaction for cysticercosis and multicentric anaplastic oligoastrocytoma.

Salomao, J.F., Pone, M.V., da Silva, A.R., Leibinger, R.D., Bellas, A.R., Campos, J.M., Garrido, J.R., Vanazzi, E., de Barros, A.C., Pone, S.M, Boechat, M.B. Section of Pediatric Neurosurgery, Department of Pediatric Surgery, Instituto Fernandes Figueira (Fundacao Oswaldo Cruz), Av. Rui Barbosa, 716-Flamengo, Rio de Janeiro, RJ, Brazil. fsalomao@ism.com.br

INTRODUCTION: An unusual case of positive immunological testing for cysticercosis in the cystic fluid obtained from an anaplastic oligoastrocytoma is presented. CASE REPORT: A 15-year-old boy was admitted with multiple brain lesions. The biggest was a cyst with a mural node and neurocysticercosis was suspected. In order to relieve intracranial pressure, the cyst was punctured and the immunological testing for cysticercosis was positive, reinforcing the clinical suspicion and leading to a clinical trial with albendazole and steroids. As the patient deteriorated the cystic lesion was removed and the diagnosis of anaplastic oligoastrocytoma was established. A second lesion was eventually approached and the histopathological diagnosis of both specimens concurred. DISCUSSION: Although some authors believe that chronic inflammatory changes following neurocysticercosis could induce the formation of brain tumors, this association may be a mere coincidence. In our case no clinical evidence of a prior infestation by Cysticercus was found. In fact, an exhaustive examination of the specimens did not reveal any areas of inflammatory reaction. We believe that the similarity of the glioma and cysticercosis antigens may be the cause of the positive reactions in the cystic fluid.

PMID: 15778869 [PubMed - in process]