



ABSTRACTS OF RECENT CHINESE PUBLICATIONS ON HELMINTHIASES<sup>1</sup> (XXIV)

316. Luo, Z.J., Wang, L., Liu, Q., Tian, G.Z., Hu, X.S., Huang, G.Q., Qian, F., Ran, R.T. & Huang, D.H. Comparative study on LDH isoenzymes of Ascaris lumbricoides, Ascaris suum and Toxocara canis. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(2): 136-137 (In Chinese)

Live human intestinal Ascaris, human biliary Ascaris, pig Ascaris and dog Toxocara canis were collected from the Chengdu area. These worms were then washed, homogenized and centrifuged (at 18 000 g for 15 minutes). The sample solution was applied on a Sepharose gel plate for electrophoresis, using human serum as control.

Only one band of the lactate dehydrogenase (LDH) isoenzyme was observed on the gel whether the sample applied came from the muscle, ovaries or testes of the human intestinal Ascaris, the human biliary Ascaris or the pig Ascaris. The band appeared at the cathode end of the gel plate, corresponding to the area between LDH<sub>3</sub> and LDH<sub>4</sub>, near LDH<sub>3</sub> of human serum. Muscle, ovaries and testes of Toxocara canis also had one band each near the anode end of the plate, corresponding to the area between LDH<sub>2</sub> and LDH<sub>3</sub> of human serum. The electrophoretic patterns of pseudocaelum fluid of human intestinal Ascaris, human biliary Ascaris and pig Ascaris showed two bands each, near the cathode end of the plate. Of these two bands the one near the point of sample application had the same position as that of the muscle, ovaries and testes of these worms, while the other one, barely visible, corresponded to the area between LDH<sub>4</sub> and LDH<sub>5</sub> of human serum. Two bands were also observed for pseudocaelum fluid from T. canis, but with quite different positions.

The results show that there is a clear difference between the band positions of T. canis and those of human intestinal Ascaris, human biliary Ascaris and pig Ascaris, whereas there is no difference among the band positions of human intestinal Ascaris, human biliary Ascaris and pig Ascaris.

317. Wu, W.D., Xu, F., Luo, J.P. & Zhou, L. Investigation of familial clustering of hookworm infection. China Public Health, 1988, 7(1): 34-35 (In Chinese, with English abstract)

In order to determine whether or not familial clustering is a feature of hookworm infection, a study was carried out in 1986 in Hanshan County, Anhui Province, a hyperendemic area of hookworm infection.

<sup>1</sup> The WHO/HELM series has been chosen as a vehicle for issuing abstracts or translations in English of papers on helminthiases published in the Chinese medical and scientific press as most of this material is not readily available to interested readers outside China. The numbering of the abstracts in this document is consecutive to that of the abstracts given in the previous WHO/HELM/89.29.

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This study involved 1362 inhabitants (662 females and 700 males) belonging to 337 families. Among these families, 56 were free of hookworm infection. In the remaining 281 families, a total of 673 cases were detected: 11 were cases of mixed infection with Ancylostoma duodenale and Necator americanus, while the others were all A. duodenale cases.

A recent survey proved that the phenomenon of familial clustering did exist and according to our analysis, the main causes might be: (1) the people surveyed had the habit of keeping human night soil to be used as manure; (2) some of the local families had the habit of working bare-footed and bare-handed in the fields without any protection so that hookworm larvae would readily penetrate the skin. As to the 56 families free of hookworm infection, investigation showed that they were mostly non-peasant families and, for those who were peasants, they had the habit of working in the fields with rubber boots on.

It may be concluded that the key-points in hookworm prevention are to manage the human night soil in a satisfactory manner and to pay close attention to individual protection.

318. Chan, J.H. & Yao, K.M. Effect of mass therapy with pyrantel pamoate in the control of ancylostomiasis. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(1): 74-75 (In Chinese)

The efficacy of pyrantel pamoate in the treatment of ancylostomiasis is reported. An investigation made in the village of Chishi, Putian County, Fujian Province, in 1984 proved that it was a heavily endemic area with a hookworm infection rate of 61.5% (1292/2102), an average egg count of 217/g faeces, a soil contamination rate of 62% and a dermatitis incidence of 17.5% (35/200). The drug dosage used for adult patients consisted of 5 tablets (each containing 100 mg base) taken before going to bed for 3 successive days; the drug dosages for children were 1 tablet for 1-3 year olds, 2 for 4-7 year olds, 3 for 8-11 year olds, 4 for 12-15 year olds, taken for three successive evenings. Follow-up conducted one month and one year after treatment revealed that the hookworm infection rate had dropped to 3.3% (73/2196) and 4.2% (87/2064), the average egg count to 35/g and 17/g faeces, the soil contamination rate to 16.9% and 0% at the two follow-ups respectively.

Mass treatment with pyrantel pamoate in an ancylostomiasis endemic area was recognized to be an effective measure in controlling the infection.

319. Xie, S.P. & Meng, J.M. The CT scan of cerebral cysticercosis before and after treatment. Beijing Medical Journal, 1988, 10(4): 215-217 (In Chinese, with English abstract)

This article summarizes an analysis made of 196 cases of cerebral cysticercosis confirmed by computerized tomography (CT) and a comparative study of the results obtained after treatment, including CT changes 3-6 months later.

The study involved 144 males and 52 females ranging in ages from 7.5 years to 69 years. Their major clinical manifestations included: high intracranial pressure (37.2%, 73/196), epilepsy (67.3%, 132/196), subcutaneous cysts (60.7%, 119/196), expulsion of worm segments (31.1%, 61/196), positive indirect haemagglutination (IHA) test of blood serum (98.0%, 192/196), positive IHA test of cerebral fluid (95.9%, 188/196), and abnormal biological and routine tests of cerebral fluid (41.8%, 82/196). CT showed that of the 196 cases, 27 were of the ventricular type, 116 of the cerebral parenchyma type, 23 of the meningitis type and 30 of a mixed type.

All of the cases studied were re-examined with CT at 3 months, 6 months and 1 year after drug administration with the following results: 77 cases (39.3%) were completely

cured (CT showed no cystic symptoms or total calcification); 56 cases (28.6%) were greatly improved (50% reduction of the foci); 57 cases (29%) were moderately improved (less than 50% reduction); and 6 cases (3.1%) were uncured (little change after treatment). Total treatment efficacy was 97%.

320. Tang, S.S. & Yang, X.Y. Acute intracranial hypertension during pyquition (praziquantel) treatment in three cases of infection with Taenia solium larvae. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(1): 73, 28 (In Chinese)

Pyquition (praziquantel) treatment of cerebral cysticercosis due to infection with Taenia solium larvae (Cysticercus cellulosae) may result in acute intracranial pressure. Three such cases are reported:

(1) A woman, 30 years old, who complained of headache and vomiting for three months, was hospitalized. Her complement fixation test was strongly positive. Biopsy and computerized tomography (CT) detected cysts on the chest and forearms and over 20 cysts in the brain. Intracranial pressure which was 190 mm H<sub>2</sub>O on admission, reached 600 mm H<sub>2</sub>O on the second day of pyquition treatment and was accompanied by unbearable headache, severe vomiting and somnolence. These symptoms subsided following hormone<sup>1</sup> administration but reappeared 12 days later: with a body temperature of 40°C and an intracranial pressure of 500 mm H<sub>2</sub>O, the patient was in a comatose state. The woman died 12 days after craniotomy.

(2) A man, 27 years old, was admitted for headache and vomiting for five months and cysticercosis was confirmed by biopsy. Intracranial pressure was 200 mm H<sub>2</sub>O before drug administration. Pyquition was given at a dosage of 20 mg/kg body weight per day and on the fourth day the pressure went up to 400 mm H<sub>2</sub>O. Craniotomy was performed on the following day, but the patient was unconscious after the operation and soon died.

(3) A woman, 28 years old, was sent to hospital because of headache, dizziness and epilepsy. Her complement fixation test was positive, but no subcutaneous cysts were detected. CT showed more than 10 cysts in the brain. Pyquition was administered on the fourth day of hospitalization and six hours after taking the first dose the patient suddenly fainted with pupils unequally dilated and slackened respiration. Surgery was urgently performed to reduce cranial pressure. The patient was discharged from the hospital 10 days later without further treatment.

321. Zhou, H.J., Liang, Y.S. & Ding, S.D. Transmission electron microscopy on the eggs of Hymenolepis diminuta and H. nana. Chinese Journal of Zoonoses, 1988, 4(2): 35-36 (In Chinese, with English abstract)

The eggs of Hymenolepis diminuta and H. nana were studied under transmission electron microscopy. The structure of the eggs of H. diminuta was observed to be as follows: (1) the egg shell, consisting of two layers: an outer layer 2.2 µm thick and an inner layer 1.5 µm thick; (2) the transparent layer; (3) the membrane-like layer; (4) the embryophore, consisting of two layers: an outer layer 3 µm thick and an inner layer 1.5 µm thick; (5) the oncosphere membrane of which two parts can be seen: three pairs of hooks and the glandular cells. The eggs of H. nana are similar in structure to those of H. diminuta.

<sup>1</sup> Note of the editor: presumably prednisone.

322. Tang, C.T., Cui, G.W., Qian, Y.C., Lu, S.M. & Lu, H.C. On the occurrence of Echinococcus multilocularis in Hulunbeier pasture, Inner Mongolian Autonomous Region. Acta Zoologica Sinica, 1988, 34(2): 172-179 (In Chinese, with English abstract)

The steppes of Hulunbeier, Inner Mongolia, are one of the three pasturelands of the world. Situated between latitudes 47° and 53° N and longitudes 115.5° and 126° E, this beautiful pasture with luxuriant grasses harbours endemic areas of a dreadful disease echinococcosis due to Echinococcus multilocularis. A number of infected adult men and women as well as children who had come for surgery were recorded in the regional hospital. The youngest child was only six years of age. The infections, however, are presumably sylvatic in nature, occurring only where wild animals exist.

From May to October 1985, investigations were conducted in four counties situated on the grasslands. It was found that the intermediate hosts of E. multilocularis were Microtus brandti and Meriones unguiculatus and that the final host was Vulpes corsac.

Of the 2635 Microtus brandti voles examined, 64 (2.43%) were found to be infected with alveolar hydatids. The infection rates in the four counties surveyed were 1.9% (29/1505), 3.8% (18/474), 2.7% (6/222) and 2.5% (11/434), respectively. Among these 2635 voles examined, all of the 738 newly born individuals were found to be free of infection, whereas 0.8% of the young voles, 2.4% of the adolescent voles born that year and 6.5% (5.2-14.3%) of the over-wintering adult voles were found to be infected. It is evident that M. brandti is the most important intermediate host of E. multilocularis in the region. However, 1 out of 6 Meriones unguiculatus was also found to be infected.

Of 6 foxes belonging to the species V. corsac that were captured in the East County Pasture, 2 were found to be infected with adult E. multilocularis. The number of worms recovered was more than ten thousand. These specimens, judging from the morphological features of the protoscolices and the adult, closely resembled E. sibiricensis (Rausch & Schiller, 1954).

323. Zheng, S.C. & Zhang, M.R. Scanning electron microscopical observations on damages on tegument and gut epithelia of Pagumogonimus skrjabini caused by praziquantel. Acta Pharmacologica Sinica, 1988, 9(3): 262-263 (In Chinese, with English abstract)

Pagumogonimus skrjabini adult worms obtained from experimentally infected dogs were observed under the scanning electron microscope 24 hours after the intragastric administration of praziquantel. Following the administration of praziquantel at a dosage of 80 mg/kg body weight, the worm body and its suckers were observed to be contracted, the tegument and the sensory papillae to be swollen and ulcerated, and the spines to be broken down. The lamellae on the surface of the gut epithelia still adhered while the sensory body had disappeared. Following a praziquantel dosage of 120 mg/kg, the worm body was observed to be contracted in a dumbbell-like shape or to be rolled up. The suckers were markedly contracted and ulcerated and the tegument became ulcerous. The lamellae on the gut epithelial surface, which looked like a honeycomb, disappeared completely and large clump-shaped structures developed. The observations made in this study showed that praziquantel at dosages of 80 mg/kg to 120 mg/kg had a lethal effect on P. skrjabini adult worms.

324. Gu, X.H., Huang, X. & Ren, Z.M. Report of Pagumogonimus skrjabini infection in Guangyuan City. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(2): 151 (In Chinese)

In 1983-1984 an epidemiological investigation was made in the Datan, Yuanji and Choubi areas of Guangyuan City, Sichuan Province. Isolation of the pathogen and animal experiments were conducted at the same time. The results indicated that the Guangyuan section of the Jialing river system was a natural endemic focus of Pagumogonimus skrjabini infection. The skin test positive rate among the population was 9.9% (67/679). The natural infection rate of Sinopotamon crabs was 11.8% (145/1233). On the

basis of the above observations and results it is considered that Guangyuan City is an endemic focus of P. skrjabini.

325. Huang, S.Y., Fan, S.Q., Chen, Y., Xu, Z.J., Liu, G.J. & Sun, X.Q. Existence of a parthenogenetic form of Paragonimus westermani in Aihui County, Heilongjiang Province. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(2): 141 (In Chinese)

From 1977 to 1985 observations were made on the aetiological agent of paragonimiasis in Aihui County.

The first intermediate host of the lung fluke was Semisulcospira amurensis. Its second intermediate host was found to be Cambaroides dauricus with an infection rate of 5.4%. Of the 27 crabs dissected, 3 (11.1%) were naturally infected. Morphological examination of metacercariae from crabs and of adult worms and eggs from cats confirmed the diagnosis of Paragonimus westermani of the triploid type.

In observing the living cells of the testes under the microscope, spermatogonia before division and 2-, 4-, 8-, and 16-cell masses in the process of division were seen, but no 32-cell masses of spermatozoons were present. In the seminal receptacle there were no spermatozoons except for many round cells. Artificial hatching of eggs at 25°C gave positive results after an incubation period of 20-23 days.

Based on the above-mentioned morphological and biological characteristics, it would appear that the lung fluke belongs to the parthenogenetic type of Paragonimus westermani (Kerbert, 1878).

This report is the first on the occurrence of the parthenogenetic type of P. westermani in Heilongjiang Province. Aihui County is the most northern district in the geographical distribution of P. westermani in Asia.

326. Zhuge, R.H. & Rong, Y.F. Biogenesis and degradation of serotonin in Fasciola hepatica. Acta Pharmacologica Sinica, 1988, 9(3): 267-271 (In Chinese, with English abstract)

The biogenesis and degradation of serotonin (5-HT) in liver flukes were studied using reverse-phase ion-pair high-pressure liquid chromatography (HPLC) and the radioisotope trace technique. The average concentration of 5-HT in Fasciola hepatica was found to be 1.23±0.22 µg/g wet weight. Incubation of the flukes in [<sup>3</sup>H] tryptophan resulted in substantial radioactivity being recovered in 5-hydroxytryptophan (5-HTP), 5-HT, and 5-hydroxyindoleacetic acid (5-HIAA). After 12 hours of incubation of the flukes in [<sup>3</sup>H] 5-HTP, 14% of the total radioactive label in the tissue were also found to co-migrate with 5-HT and 4% with 5-HIAA. The levels of 5-HT and 5-HTP in flukes were not influenced by the tryptophan hydroxylase inhibitor p-chlorophenylalanine, nor was the level of 5-HIAA influenced by the monoamine oxidase inhibitor tranylcypamine; however, the level of 5-HT was increased and that of 5-HIAA was decreased by another monoamine oxidase inhibitor iproniazid. These results suggested that the enzymes which converted tryptophan to 5-HTP (TRP hydroxylase), 5-HTP to 5-HT (5-HTP decarboxylase), and 5-HT to 5-HIAA (monoamine oxidase) occurred in flukes and that the pathways of serotonin biogenesis and degradation were possibly similar to those in mammals. Some similarities and differences between the enzymes of flukes and mammals were found in the catalytic properties and in the enzyme-inhibitor affinities. In addition, F. hepatica could take up 5-HT from an exogenous source as do Schistosoma mansoni, Hymenolepis diminuta, etc. Cyproheptadine, a 5-HT antagonist, could suppress the uptake of 5-HT by flukes. It is possible that the 5-HT in flukes is both endogenous and exogenous.