



ABSTRACTS OF RECENT CHINESE PUBLICATIONS ON HELMINTHIASES¹ (XV)

195. Zhou, B. F. et al. The use of methylene blue-eosin-borax stain in determining the viability of Ascaris eggs. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 48-49 (In Chinese, with English abstract)

The use of methylene blue-eosin-borax for staining fertilized Ascaris eggs is described. The viable eggs remain unstained while the internal structure of the dead eggs is stained blue. The method which requires no special equipment is simple, rapid and accurate. The stain, when kept at room temperature, can be used for a year and a half.

196. Huang, X. X. et al. Studies on cultivation of adult Necator americanus in vitro. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 35-37 (In Chinese, with English abstract)

In vitro cultivation of adult Necator americanus was carried out in different media, i.e. puppy dog serum, calf serum, medium 199 and Tyrode's solution. Among them, puppy dog serum medium and a solution containing a small amount of medium 199 gave better results. In these two media, 64.2% of worms survived for two weeks and 21% of them for over one month. The longest survival times for female and male worms were 52 and 43 days respectively.

Copulation was observed in culture medium and eggs, both fertilized and unfertilized, as well as larvae were seen.

The successful in vitro culture of N. americanus has provided a new approach to the study of the developing stages of this parasite and of the difference between it and Ancylostoma duodenale.

197. Zhu, D. Y. et al. Treatment with praziquantel and follow-up of 50 cases of cerebral Taenia solium cysticercosis. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 50-53 (In Chinese, with English abstract)

Praziquantel was used to treat 50 patients suffering from cerebral Taenia solium cysticercosis. Each treatment course consisted of 120 mg praziquantel per kg body weight given in 4-6 days. Of the 50 patients 27 received two courses and two patients received three courses. In the 42 patients followed up for 1-3 years after treatment, most of the subcutaneous or intramuscular cysticercus nodules had disappeared or become reduced in size. Symptoms such as epileptic seizure, headache, nausea, vomiting and mental disturbance became markedly improved, except in a few patients in whom they were aggravated. The side effects (e.g. exacerbation of epileptic seizure and of other neuropsychic symptoms) observed during or shortly after therapy were found to be much more severe than those noted in the subcutaneous muscular type of T. solium cysticercosis treated with the same drug dosage and course; this greater severity of the side effects probably due to the allergic reaction caused by the damaged cysticerci in the brain rather than to the action of the drug itself. This fact should be borne in mind when treating cerebral T. solium cysticercosis with praziquantel which is highly recommended for such treatment.

¹ 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/86.20.

198. Zhao, S. Q. et al. A study of ELISA in the diagnosis of human echinococcosis. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 24-26 (In Chinese, with English abstract)

An indirect enzyme-linked immunosorbent assay (ELISA) for the serodiagnosis of human echinococcosis was described. The antigen used was fluid from Echinococcus granulosus lung cysts that was treated with activated charcoal.

The optimal conditions for the test were: antigen 10 µg/ml and the suitable dilution of antibody 10^{-1} to 10^{-5} . Positive results were obtained from all of the 25 patients with surgically confirmed E. granulosus echinococcosis (reading 0.930 ± 0.450), while the sera of 30 healthy controls were negative (reading 0.119 ± 0.055).

The specificity of this method was demonstrated by both the replacement test and the block test. In addition, ELISA was more sensitive than counter electrophoresis and the complement fixation test. However, it showed 7.4% false positives and cross-reactions with sera from tuberculosis or hepatitis patients.

199. Jiang, C. P. et al. Experimental studies of Echinococcus in white mice. Chinese Medical Journal, 1984, 97(11): 849-852 (In English).

In order to study the therapeutic effects of some drugs, especially those of traditional Chinese medicine, on echinococcosis, 50 hybrid white mice were experimentally infected with Echinococcus granulosus cysts. The protoscolices isolated from E. granulosus cysts from sheep liver or lung were injected intraperitoneally into the mice. The results showed that secondary fertile E. granulosus cysts can be produced on the intraperitoneal omentum, mesentery and liver surface. Serial histological sections of E. granulosus cysts showed that embryonic protoscolices might be produced either by hyperplasia of the brood capsule originated from a fertile cyst, or directly from the germinal membrane of the wall of a fertile cyst.

200. Jiang, C. P. A clinicopathological analysis of 25 cases with alveolar echinococcosis of the liver. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 21-23 (In Chinese, with English abstract)

Clinical and pathological findings in 25 patients, 18 males and 7 females, with alveolar echinococcosis of the liver were analysed. The major symptoms were epigastric mass (96%), abdominal pain (40%), dyspepsia (24%), jaundice (20%) and portal hypertension (8%). The plain film roentgenogram of the abdomen in four out of eight patients showed diffuse radiolucencies outlined by calcific densities over the hepatic region. Space-occupying lesions of different sizes in the liver of 10 patients were all found by radioisotopic scanning. Casoni's test was positive in 93.7% of 16 patients. Pathological findings were observed during laparotomy or autopsy in 22 patients. The gross type of a large circumscribed mass was most common (54.5%) followed by the mixed type (22.7%) and the nodular type (18.1%). Microscopically, numerous alveoli of various sizes and shapes were revealed and the cuticular layer of alveoli was characterized by a laminated arrangement. Fibrogenesis and inflammatory infiltration were usually seen in the close vicinity of the alveoli or around the lesions forming a parasitic granuloma. The propagation of alveoli showed both exogenous and endogenous budding. The diagnosis was established preoperatively in only 11 patients (44%), while in 13 patients (52%) a misdiagnosis of cancer or Echinococcus cyst was made. Surgery was performed on 21 patients and in none was resection possible. Of the patients followed up, 4 died of hepatic failure within 1-6 months postoperatively, 1 died of brain metastasis a year later and 14 survived for 1-3 years.

201. Zhang, M. R. et al. Aetiological study on paragonimiasis at the northern foot of Qinling mountain, Shaanxi. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 38-41 (In Chinese, with English abstract)

The aetiology of paragonimiasis was studied from August to December 1981 in the Tongkwan, Changan and Huxian regions of Shaanxi Province. Metacercariae were found in 51 crabs examined. They measured $417.9 \times 404 \mu\text{m}$ on average and the ventral sucker was larger than the oral sucker. Of the 84 adult lung flukes obtained from the lungs of one cat, three dogs and two white rats that had been fed with metacercariae, 20 were identified. The adult lung flukes obtained from dogs were on average 9.53 mm in length, and 3.75 mm in width, the width-to-length ratio being 1:2.54. The ventral sucker was situated on the anterior third of the parasite and was larger than the oral sucker. The cuticular spines were blunt in shape, and in a single growth arrangement. The ovary was more branched. The testes were slender with few branches and were situated in the posterior half of the worm. Each egg contained 6-7 yolk cells. The average size of 142 eggs measured was 69.9 by $44.6 \mu\text{m}$. There was a short spine at the posterior end of some eggs. The species of lung fluke in Shaanxi Province was thus identified as Paragonimus skrjabini Chen 1959.

202. Yang, S. J. et al. Epidemiological study on paragonimiasis in Wufeng County, Hubei Province. Chinese Journal of Epidemiology, 1984, 5(6): 354-356 (In Chinese, with English abstract)

An epidemiological survey was carried out in Wufeng County, a mountain area along the south-west border of Hubei Province. Skin tests were carried out on 87 994 persons, representing 47.94% of the total county population. The results showed that 9966 persons were infected of whom 3325 had disease manifestations. The average infection rate was 11.33% and the morbidity rate was 3.78%. There were more males than females with clinical manifestations. The cumulative infection rate in the 2-30 year age-group was 95.06% indicating that Wufeng was an epidemic area of paragonimiasis in Hubei Province. Typical clinical manifestation consisted of subcutaneous wandering tumour, but 96.48% of the cases were atypical. The dominant parasite species was Paragonimus szechuanensis or P. skrjabini. The first and secondary intermediate hosts in this particular area were also described.

203. Li, M. G. et al. Seasonal distribution and natural infection with Paragonimus skrjabini in Pseudobythinella shimenensis. Journal of Parasitology and Parasitic Diseases, 1985, 3(2): 101-103 (In Chinese, with English abstract)

Studies on the seasonal distribution of the snail Pseudobythinella shimenensis and its natural infection with Paragonimus skrjabini were carried out in Kaiyan county, Guizhou Province.

The monthly snail density from January through December 1982 ranged from 41 ± 23 to $156 \pm 99/33.3 \text{ cm}^2$.

The average monthly incidence of snails infected with P. skrjabini larvae from October 1982 to April 1983 was 0.45% (0.29-0.85%), while average intensity of infection was 2.4 (2-3.5) for rediae and 16.1 (5-33.6) for cercariae per positive snail. Snails positive for P. skrjabini are sporadically distributed in the natural focus.

In conclusion, it is suggested that epidemiological surveys of paragonimiasis by examining the first intermediate host, Pseudobythinella shimenensis, to determine natural foci may be carried out in any month of the year.

204. Wang, X. G. et al. Clinical analysis of 119 cases of paragonimiasis szechuanensis. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 5-8 (In Chinese, with English abstract)

Infection due to Paragonimus szechuanensis is endemic in more than 30 counties and cities in Sichuan. The cerebral type is particularly dangerous. Over the last 22 years, 119 cases of paragonimiasis were analysed. It was found that 95% of the infections had been acquired by ingesting raw or inadequately cooked crabs. Clinical manifestations were characterized by visceral and subcutaneous larva migrans so that eggs could not be detected in either sputum or faeces, a striking difference from infections with P. westermani. Four clinical types could be distinguished: the pulmonary type accounting for 36 cases (30%), the

subcutaneous type accounting for 19 cases (16%), the pulmonary and subcutaneous types combined accounting for 53 cases (44.5%), and the cerebral type accounting for 11 cases (9.2%). Patients were treated with bithionol. The dosage schedule was 20 mg/kg body weight given three times a day daily (78 patients) or every other day (41 patients) for 20 days. The immediate cure rates were 96.1% and 92.3% respectively ($P > 0.05$). Among the 59 patients followed for 1-17 years after treatment, the long-term cure rate was 98.3%. Side effects of the drug consisted of abdominal pain, diarrhoea, nausea, vomiting and rash. The total rate of side effects was 40%.

205. Chen, S. Z. An analysis of radiological signs of typical pulmonary calcification in 8 cases of paragonimiasis. Chinese Journal of Radiology, 1984, 18(2): 128-130 (In Chinese, with English abstract)

Eight cases of paragonimiasis with typical pulmonary calcification were studied. The calcification varied in appearance; it could be cystic, nodular, petalled or in the form of a calcified pleural envelope. It took more than 10 years for deposition of calcium, but less time was required in those patients who had received drug therapy. The process of calcification could be the result of mummification of the parasite with secondary deposit of calcium, or there could be degeneration of the cystic wall with retraction and hyalinization followed by calcification. It is concluded that calcification can occur both in the lung parenchyma and on the pleura in the quiescent and curative stage of paragonimiasis due to infection with Paragonimus westermani.

206. Lei, C. Q. et al. Preliminary studies on the karyotype of Euparagonimus cenocopiosus Chen, 1962. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 32-34 (In Chinese, with English abstract)

In the reported studies, the karyotype of Euparagonimus cenocopiosus was investigated using a slight modification of the cell culture method of Terasaki.

The total number of chromosomes in E. cenocopiosus is 22 ($2n=22$, $n=11$). The karyotype consists of one pair of large-sized metacentric, four pairs of medium-sized subtelocentric, two pairs of small-sized metacentric and four pairs of small-sized submetacentric chromosomes.

Chromosomes 1 and 6 of E. cenocopiosus have some morphological features which can be used for the speciation of lung flukes.

207. Chen, Y. T. et al. Long-term observation of circulating antigen in sera from patients with clonorchiasis using the enzyme-linked immunosorbent assay (double sandwich method). Chinese Journal of Internal Medicine, 1984, 23(11): 694-696 (In Chinese, with English abstract)

The enzyme-linked immunosorbent assay (double sandwich method) was used for long-term observation of circulating antigen (CA) in sera from 127 clonorchiasis patients before and after treatment. The mean CA concentration before treatment was 0.5777 $\mu\text{g/ml}$, while one month, three months and 13 months after treatment the means were 0.2024 $\mu\text{g/ml}$, 0.1706 $\mu\text{g/ml}$ and 0.1008 $\mu\text{g/ml}$ respectively. In egg-negative patients after treatment, CA concentrations dropped faster and more noticeably than in egg-positive patients in whom higher CA levels persisted until 13 months after treatment.

There was a good correlation between CA detection and results of stool egg examination in CA-negative patients one month after treatment and in almost all patients three and 13 months after treatment. Therefore, stool examination was not necessary for them; but for CA-positive patients one month after treatment stool examination was necessary.

208. Cao, W. J. et al. Some observations on the clonorchiasis intradermal test. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 9-11 (In Chinese, with English abstract)

The site of the clonorchiasis intradermal test using Clonorchis worm antigen and the duration of a positive skin reaction were studied during surveys on clonorchiasis in the suburbs of Beijing.

In 124 inhabitants of a clonorchiasis endemic area, intradermal tests using the same Clonorchis antigen were performed on three different sites at the same time namely the flexor surface of the forearm, the extensor surface of the forearm and the interscapular region on the back. After statistical treatment of the results obtained, the skin positive rates for the three sites showed no significant difference, but the egg positive rate was much higher in persons with a positive reaction in all three sites than in those with a positive reaction in only one or two sites. No egg positive case was found in those persons who were negative in all three sites.

Re-examination of 100 persons seven years later using the same method and the same antigen revealed that in properly treated and cured cases of Clonorchis infections the originally positive skin reaction had in most cases changed to negative, while in most of the untreated or treated but not cured cases the skin test remained positive.

209. Zhang, Y. J. et al. Studies on the life histories of three species of heterophyid trematodes and Metorchis orientalis Tanabe, 1921. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 12-16 (In Chinese, with English abstract).

The morphology and structure of both adult and larval stages of three species of heterophyid trematodes, namely, Centrocestus formosanus Nishigori, 1924, Haplorchis pumilio Looss, 1899, and Procerovum varium Onji & Nishio, 1916, and of Metorchis orientalis Tanabe, 1919, are described with a view to studying the phylogenetic relationship of the families Opisthorchidae and Heterophyidae. The principal features of both families were compared, with special emphasis being laid on developmental stages and adults.

While the development of the three heterophyid trematodes is further investigated under local conditions, the completion of the life cycle of M. orientalis is described here for the first time.

Based on information obtained from the life-cycle studies of the four species of trematodes and taking into account the similarities and differences between their morphological characters, it was concluded that there exists an intimate relationship between the two families. They should belong to the same superfamily, Opisthorchioidea (Faust, 1929) Vogel 1934.

210. Lin, J. X. et al. Epidemiological investigation and experimental infection of Echinochasmus japonicus. Journal of Parasitology and Parasitic Diseases, 1985, 3(2): 89-91 (In Chinese, with English abstract)

The epidemiological features and distribution of infection with Echinochasmus japonicus were studied in eight counties in the south of Fujian and in Raoping County in Guangdong. The results of these studies as well as those of human and animal experimental infection are reported. E. japonicus was found to be present in all nine counties. The rate of human infection was closely related to the size of the fish ponds, the scale of fish breeding, the importance of dog and cat populations, as well as the way of eating fish by the local population. E. japonicus is widely adapted to various kinds of intermediate and final hosts, being present in all the kinds of fish investigated, especially in Pseudorasbora parva. This trematode worm does not only parasitize human and mammalian animals, but also infects birds. It develops rather quickly after infecting its host, with its eggs being found in the hosts' faeces 5-9 days after infection.