



ABSTRACTS OF RECENT CHINESE PUBLICATIONS ON FILARIASIS¹ (XI)

73. Han, J. & Tao, H. Z. Development of microfilariae of Brugia malayi to the sausage form in three media in vitro. Chinese Journal of Zoonoses, 1989, 5(3): 16-18 (In Chinese, with English abstract)

Microfilariae of Brugia malayi exsheathed by incubation in Hanks balanced salt solution (HBSS) of 20 mM CaCl were cultured in media HamF12, Tc199 and RPMI-1640, which were supplemented with one or more of the following different components: 5% heat-inactivated newborn calf serum, 2μ/ml glucose, 350 μg/ml L-cystein hydrochloride, 600 μg/ml glutamine. The experiments were all carried out at a temperature of 28±1°C for 10 days.

The results showed that the microfilariae were able to develop into the sausage form in the various media with one or more of the supplemental components. The development rates in HamF12 and Tc199 supplemented with 5% heat-inactivated newborn calf serum were 26.7% and 12.2%, respectively; in HamF12, Tc199 and RPMI-1640 supplemented with 350 μg/ml L-cysteine hydrochloride, the development rates were 36.2%, 22.9% and 14.5%, respectively. When 600 μg/ml glutamine was added to both HamF12 and Tc199, the development rates were 38.9% and 37.1%, respectively. In addition to their effect on microfilaria development, supplemental components prolonged the survival period of larvae in the HamF12 and Tc199 media supplemented with both 5% heat-inactivated newborn calf serum and 600 μg/ml glutamine, especially in the latter medium. However, the survival period was shortened when all of the supplemental components were added.

74. Huang, H. F., Zheng, F. S., Li, J., Zhang, P. Z., & Zuo, X. Electrophoretic analysis of protein and isoenzyme patterns of five geographical strains. Chinese Journal of Parasitic Disease Control, 1988, 1(1): 17-20 (In Chinese, with English abstract)

Protein and isoenzyme electrophoretic patterns of phosphoglucomutase (PGM), glucose phosphate isomerase (GPI), glucose-6-phosphate dehydrogenase (G-6-PD), malate dehydrogenase (MDH), esterase (EST), lactate dehydrogenase (LDH) and peroxidase (PO) of adult periodic Brugia malayi from five different geographical areas (i.e. Jianyang in Fujian Province, Jingxian in Anhui Province, Leshan in Sichuan Province, and Dushan and Libo in Guizhou Province) were analysed and compared by disc electrophoresis.

No significant difference in protein and isoenzyme patterns of PGM and PO was observed among the five geographical strains of B. malayi. However, both MDH and GPI showed isoenzyme patterns for the two Guizhou strains that were different from those for the three other strains. No band was found for G-6-PD, EST and LDH.

75. Li, Y. L. & Han, J. J. Analysis of the common antigen component between Brugia malayi adults and Onchocerca armillata adults. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(4): 259-260 (In Chinese, with English abstract)

¹ The WHO/FIL series has been chosen as a vehicle for issuing abstracts or translations in English of papers on filariasis 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/FIL/89.184.

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The common antigen component between Brugia malayi and Onchocerca armillata was demonstrated by cross-immunoelectrophoresis with antigens from these two filaria species against sera from patients infected with B. malayi. When the two antigens were subjected to sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDA-PAGE) and enzyme linked immunoblotting (ELIB), a protein with a relative molecular weight of approximately 43 000 was identified as the common antigen component.

76. Wu, H. & Li, Y. H. Studies on the dynamics of specific antibodies in sera of jirds infected with Brugia malayi. Chinese Journal of Parasitic Disease Control, 1989, 2(2): 73-76, 137 (In Chinese, with English abstract)

The indirect fluorescent antibody test (IFAT) and the immunoenzymatic staining technique (IEST), using as antigen frozen sections of adult Brugia malayi (MAWS) and Setaria corvi (SAWS), were applied to detect the IgG and IgM levels in jirds infected with B. malayi. Of 20 jirds aged 2-3 months, 11 were infected with 100-200 B. malayi (Group I), 3 were infected with 300 B. malayi (Group II) and the remaining served as the control group.

In the IFAT and the IEST, the IgG levels of jirds were found to increase from the 2nd to the 14th week after infection, reaching their highest peaks in the 12th to 14th week, whereas the IgM levels of jirds decreased from the 2nd week after infection. In the IFAT, using MAWS and SAWS as antigens, the highest geometric mean reciprocal titres (GMRTs) for IgG were 328.56 for Group I and 388.02 for Group II. In the IEST with MAWS as antigen, the highest GMRTs for IgG were 82.14 and 97.01 for Groups I and II, respectively, but with SAWS as antigen the GMRTs were 308.69 and 388.02 for Groups I and II, respectively. In addition, examination of the abdominal fluid of jirds showed that the microfilaria infection rates were 27.3% and 20.0% for Groups I and II, respectively, in the 12th week after infection, and 54.5% and 60.0% for Groups I and II, respectively, in the 16th week after infection.

77. Ji, S. R., Wang, K. T., Zhang, Z., Zhao, H. F., Wang, L. Y., Song, J. H. & Chen, M. Diagnosis of filariasis by the indirect fluorescent antibody test with sonicated microfilariae of Brugia malayi as antigen. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(4): 256-258 (In Chinese, with English abstract)

The indirect fluorescent antibody (IFA) test using sonicated microfilariae of Brugia malayi as antigen has been carried out since 1983 for the diagnosis of filariasis. The microfilariae were first sonicated into fragments 20-30 μ m long, and they were then applied to nobecutane-coated slides. Specific fluorescence was seen at the cut ends of the fragmented microfilariae and along the cuticle. Comparison of the results obtained with sera collected by venepuncture and eluates of ear-lobe blood on filter paper showed no statistically significant difference between the two techniques, and consequently the latter technique could be used instead of the former.

The above antigen was also tested against 114 plasma samples from both bancroftian and malyan microfilaraemic patients and 191 healthy controls. At the titre of 1:10, the sensitivity was 86.8% and the specificity, 98.4%.

In a field investigation, when the same titre of 1:10 was considered as positive, increase in the positive rate of the population coincided with the microfilaria rate, and variation of the positive rates ran in parallel with the degree of endemicity.

It was concluded that the sonicated microfilarial antigen might be useful for the epidemiological investigation and surveillance of filariasis.

78. Tan, Q. F., Yang, Y. L., Xia, X. F., Li, J. Q., Wu, Z. Y. & Xu, J. Q. (Director: Yang, Zhaoxin) Report on the use of Setaria digitata adult antigen for the diagnosis of filariasis by the indirect fluorescent antibody test. Acta Universitatis Medicinalis Anhui, 1988, 23(2): 99-100 (In Chinese, with English abstract)

Among 104 patients with bancroftian microfilaraemia who were tested by the indirect fluorescent antibody test (IFAT) using frozen sections of adult Setaria digitata and adult Brugia malayi as antigens, 88 (84.6%) sera showed a positive reaction to S. digitata adult antigen and 94 (90.4%) to B. malayi adult antigen.

Serum and blood on filter paper from the 104 patients were tested simultaneously using S. digitata adult antigen alone. The dilution level being 1:10, the positive IFAT rates were 94.2% (98/104) and 88.5% (92/104), respectively. It was recognized that the latter could be used instead of the former.

This study indicates that frozen sections of adult S. digitata constitute a sensitive and easily available antigen which can be used for the diagnosis of human filariasis, in the absence of B. malayi adult worm antigen.

79. Liu, X. J., Liu, J. Y. & Chen, Z. Control of filariasis in Fujian Province. Chinese Journal of Parasitic Disease Control, 1989, 2(2): 65-68, 136 (In Chinese, with English abstract)

Filariasis in China was first discovered in Xiamen, Fujian Province. In 1958, the examination of blood samples from 10 820 610 persons revealed a microfilaria rate of 8.7%. According to this estimation, about 2 million patients with filariasis were distributed throughout the province. The incidence of malayan filariasis was higher than that of bancroftian filariasis. Before 1970, patients with malayan filariasis were given a single dose of 1g diethylcarbamazine (DEC) and those with bancroftian filariasis were given 1g DEC daily for 2-3 days; DEC was then given for 10-12 days to both malayan and bancroftian filariasis patients at a total dose of 2.5g and 4g, respectively. In the 1970s, indoor insecticide spraying was used for the control of Anopheles lesteri anthropophagus, the vector of Brugia malayi in Fujian. Since 1980, DEC-medicated salt with 1.5g DEC per person for the first month and 4g over the 2nd to 4th months was used for the mass treatment of bancroftian filariasis.

All treatments were considered effective as the mean microfilaria rate decreased significantly. In 1987, blood samples of more than 494 000 persons collected from 269 townships (25.1% of Fujian Province) and 645 villages (4.6% of Fujian Province) were examined; microfilariae were found in the blood samples of 762 persons. The mean microfilaria positive rate in town inhabitants was 0.05% while that in village farmers was 0.17%. In 1988, in two previously endemic villages with a high prevalence of filariasis, the blood microfilaria rate was only 0.12%. It is shown that filariasis has been basically eliminated in Fujian Province.

80. Zhang, Q. J., Zhang, S. Q., Yan, W. X. & Li, X. F. Cross-sectional surveillance in west Hubei with filariasis basically eradicated. Chinese Journal of Parasitology and Parasitic Diseases, 1988, 6(4): 299-300 (In Chinese, with English abstract)

Cross-sectional surveillance was carried out in 384 villages of 12 counties in west Hubei where filariasis had been basically eradicated 2-3 years ago.

Among 155 235 persons surveyed in an area with bancroftian filariasis, 107 microfilaraemic persons were detected by blood examination, the average microfilaraemia rate (MFR) being 0.07%. However, MFR was as high as 1.31% and 1.91% in

two villages, that is to say slightly above the parameter used for basic eradication of filariasis; the highest microfilaria (mf) density was 40 mf/120 μ l and only 1 out of 2785 Culex pipiens fatigans dissected was found to harbour 2nd-stage larvae. It was considered that in such areas surveillance should be strengthened.

Currently another follow-up observation in areas of malayan filariasis was carried out on 64 041 persons from 74 villages. Only one person, who had never been examined, was found positive by blood examination, the average MFR being 0.0016% and the average microfilaria density being 7 mf/120 μ l. Dissection of 2706 Anopheles sinensis failed to find larval infection. These results suggest that filariasis transmission in this area has been interrupted; the main task in the later stage of filariasis control is to treat those individuals with symptoms and signs.

81. Zhang, Q. J. & Zhang, S. Q. Studies on microfilaria carriers in areas from which filariasis had been virtually eliminated. Hubei Preventive Medicine, 1989, (1): 17-18 (In Chinese)

In 421 villages of 68 counties in Hubei Province where filariasis had been virtually eliminated from 1980 to 1986 after the adoption of a series of control measures, blood smears revealed that 597 of the 499 633 persons examined had microfilaraemia, the average microfilaraemia rate (MFR) being 0.12%, and that 12 counties were free from the infection. Of 597 persons found to be infected, 534 (i.e. 89.5%) were new cases. Of these 534 new cases, 228 had never been examined, 278 gave negative responses in previous blood examinations and 25 were from families with microfilaraemic persons. Sixty-three persons with past infections (i.e. 10.5%) remained positive for microfilariae. The microfilaria (mf) density ranged from 1-183 mf/120 μ l, with a mean density of 6.88 mf/120 μ l, and 85.93% had a microfilaria density under 10 mf/120 μ l.

All the cases were sporadically distributed in the residual foci of previously hyper- and meso-endemic area. It is suggested that management of the migrant population as well as careful blood examination and treatment to microfilaraemic persons are needed.

82. Cui, Z. H., Shang, Q., Yang, B. J., Lin, X. J., Xu, J. F., Gao, C. L., Liu, B., Xie, C. & Sun, Z. F. Epidemiological surveillance of filariasis after its being basically eradicated in Shandong Province. Chinese Journal of Parasitology and Parasitic Diseases, 1989, 2(1): 4-7 (In Chinese, with English abstract)

This paper reports the results of epidemiological surveillance in areas where filariasis had been basically eradicated and control measures were no longer applied in Shandong Province. A three-year longitudinal survey in 18 villages of five counties and a cross-sectional survey in 13 villages of four counties were carried out. It was found that the average microfilaria rate for the longitudinal survey had dropped further from 0.28% in 1980 to 0.19% in 1986 (i.e. a reduction of 32.1%) and that for the cross-sectional survey the drop was from 0.15% in 1980 to 0.05% in 1986 (i.e. a reduction of 38.6%). Of the microfilaraemic cases, 34.2% were found to have become negative during the two-year follow-up. The positive rates for the indirect fluorescent antibody test and the skin test were 34.2% and 38.6%, respectively. In the longitudinal survey, 240 992 Culex pipiens pallens were dissected and 152 (i.e. 0.06%) were found to harbour different stages of larvae of which five were infective larvae detected in four vector mosquitos. In the cross-sectional survey, 3875 C. p. pallens were dissected and only one, which had bitten an immigrant from Zhejiang, was found to harbour one larva that was in the first stage. No positive mosquito was found in the households of native villagers. No new infection was found by either the longitudinal or the cross-sectional survey, indicating that the transmission of filariasis in these areas was interrupted. The results showed that in areas where filariasis has been basically eradicated, further control measures may not be necessary but management of population movement and surveillance should be strengthened.

83. Zhong, C. G., Sheng, Q., Xu, J. F., Yang, B. J., Li, W. B. & Fang, J. G. Epidemiological surveillance of filariasis in the controlled areas of Shandong Province. Chinese Journal of Parasitic Disease Control, 1989, 2(1): 1-3, 53 (In Chinese, with English abstract)

Filariasis was basically eradicated in Shandong Province in 1983. Since then epidemiological surveillance has been conducted. During 1984-1988, a total of 420 999 people in 559 villages of 39 counties were examined by blood films and 139 (0.033%) were found to be microfilaraemic.

Longitudinal surveys were carried out on 15 715 persons in 18 villages of 5 counties.

The microfilaraemia rates in each of the five survey years (1984-1988) were 0.17%, 0.13%, 0.15%, 0.05% and 0.05%, respectively, and the natural infection rates of Culex pipiens pallens were 0.13%, 0.05%, 0.01%, 0.007% and 0, respectively; 85.4% of the persons with microfilaraemia became negative during the observation period.

The results show that the transmission of filariasis in the province has been interrupted.

84. Zhang, S. Q., Jiang, E. X., Peng, G. P., Dong, M. Y., Huang, S. Q. & Yang, M. C. Clinical study on treatment of lymphatic filariasis with furaprimidone. Hubei Preventive Medicine, 1989, (1): 1-3 (In Chinese, with English abstract)

Four different dosage schedules of furaprimidone were used in the treatment of 99 patients with Brugia malayi infections and 103 patients with Wuchereria bancrofti infections. Blood examinations made at 3 and 6 months after treatment showed that furaprimidone was more effective in persons with W. bancrofti microfilaraemia than in those with B. malayi microfilaraemia; clearance rates for B. malayi microfilaraemia increased noticeably along with increased doses of furaprimidone as compared to diethylcarbamazine (Hetrazan). The long-term effectiveness of furaprimidone against W. bancrofti microfilaraemia was better than that of diethylcarbamazine, the difference being statistically significant ($X=7.951$, $P<0.01$).

For patients with B. malayi microfilaraemia who were given 20 mg/kg body weight of furaprimidone per day for 5 days, examination of blood smears at 3 and 6 months after treatment showed negative conversion rates for microfilariae of 22.0% and 15.1%, respectively. For patients with W. bancrofti microfilaraemia who were given 20 mg/kg body weight of furaprimidone per day for 7 days and who were followed-up at 3 and 6 months after treatment, clearance of microfilaraemia reached 95.1%. In both treatment courses, microfilaria densities of the two species were decreased by 97%. The efficacy of furaprimidone was therefore shown to be better than that of diethylcarbamazine and its long-term efficacy was also found to be stable.

In two patients with acute lymphangitis and one with chyluria who were also treated with furaprimidone according to the above-mentioned dosage schedules, symptoms were alleviated and frequency of the attacks was decreased. This observation indicates that furaprimidone has therapeutic efficacy against lymphatic filariasis, and, according to long-term follow-up results, it seems that this drug also has a lethal effect against the adult worm. The side effects of furaprimidone were mild, affecting mainly the digestive system, and disappeared rapidly after interruption of drug administration.

85. Hou, L. Q., Liu, G. J., Liu, Q. Y., Kong, Q. Y., Luo, C. Z. & Kong, Q. A. Lymph node-venous anastomosis in the treatment of chyluria. Chinese Journal of Parasitic Disease Control, 1988, 1(1): 42-44 (In Chinese, with English abstract)

Lymph node-venous anastomosis, based on the principle of lymph shunt, was used to treat 30 patients with chyluria who included 18 males and 12 females aged 25-61 years. The course of the disease in these patients varied from 15 days to 20 years, the average being 9.8 years. All 30 patients had chyluria upon admission to hospital where lymph node-venous anastomosis was performed on all of them as follows: 18 were operated on the left side, 7 on the right and 5 on both sides. Dipyridamole was given orally as auxiliary treatment.

Efficacy of the treatment was 90.0% at the time the patients were discharged from the hospital. Of the 21 patients followed-up, chyluria had disappeared in 16 of them 6 months later, representing a chyluria-disappearing rate of 76.2%. Of 5 patients who were improved on leaving hospital, chyluria was undetectable in 3 of them 60 days later. One patient recovered within 6 months and one had chyluria cured after a second operation. Chyluria reappeared in a patient cured three months before and then disappeared again after operation on the opposite side. Treatment failed in 3 cases.

In conclusion, the treatment was quite satisfactory with a total efficacy of 85.7%, i.e. 76.2% of chyluria-disappearing cases and 9.5% of improved cases.

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