A case of paragonimiasis

Human infestation with a *Paragonimus* parasite, a genus of fluke (trematode), is generally regarded as a problem confined to the Far East from whence most of the literature on the subject has originated. The disease caused by this parasite also occurs in tropical Africa and since the civil war paragonimiasis has become endemic in eastern Nigeria with infection rates of between 5 and 10% (Nwokolo, 1972a, b). No age is immune but the disease is particularly prevalent in the 10–14 year age group (Nwokolo, 1972a, 1974).

Paragonimiasis is acquired by eating freshwater or land crabs or crayfish that have been inadequately cooked. These infected and improperly cooked crabs are intermediate hosts for the parasite and are probably the cause of the recent increase in paragonimiasis (Nwokolo, 1974). Wild boars and pigs have recently been shown to be paratenic hosts of *Paragonimus westermani* and human disease can result from eating raw meat from these animals (Miyazaki and Habe, 1976).

This case of paragonimiasis in a Nigerian child, now resident in Britain, is of interest not only because it appears to be the first of its kind diagnosed in this country, but also because it demonstrates the need to be on the alert for 'imported disease' and shows we must broaden diagnostic parameters to take into account the constantly changing epidemiology of disease.

Case report

First admission. A 2½-year-old Ibo girl presented at Booth Hall Hospital 3 weeks after arriving in Britain. She complained of a painful left knee of a few hours' duration but was otherwise well and x-rays of the hip and knee were normal. After a period of observation she was allowed home. Her blood count showed an absolute eosinophil count of $4 \times 10^9/l$ ($4000/mm^3$).

Second admission. 19 days later the child was again admitted with a swelling in the left infraclavicular region which had been noticed that morning. There was no history of cough, haemoptysis, anorexia, or weight loss. The delivery at the Teaching Hospital Enugu, Nigeria, had been normal with a birth weight of 2.7 kg. No other country had been visited before immigration here. She had had BCG vaccination at 4 months and received smallpox and yellow fever vaccinations before travelling. The family history was negative.

Subsequent interrogation found that the child had eaten crayfish while in Nigeria.

On examination she was afebrile and did not appear ill. Height and weight were on the 75th centile (Tanner). Discrete, nontender axillary, submandibular, and inguinal nodes of 1 cm were present bilaterally. The chest swelling was about 10 cm in diameter with ill-defined margins. It was neither tender nor warm: it felt cystic and seemed to be in the muscle layer. There was no decrease in air entry or change in percussion note over the chest.

Investigations showed Hb 12 g/dl; WBC $27.6 \times 10^9/l$ ($27\,600/mm^3$) with 49% eosinophils (absolute eosinophil count of $14 \times 10^9/l$; $14\,000/mm^3$); ESR 37 mm in 1st hour Westergren; Mantoux test 1:1000 negative, 1:100 8 mm diameter induration after 72 hours. Chest x-ray showed a cavity in the left upper lobe with a small pleural effusion (Figure). Liver scan was negative.

Figure Initial chest x-ray showing cavity in the left lung.

The principal diagnoses considered were tuberculosis, tropical eosinophilia, and hydatid disease but, in view of the patient's country of origin and chest x-rays, paragonimiasis was also considered. Specimens were sent to the Liverpool School of Tropical Medicine and the following results were obtained: stools: infertile ascaris ova; gastric washings: no parasites; pleural aspirate (blood-stained): no ova, complement-fixation test (CFT) for fasciola 1:32; serum: CFT for (1) fasciola 1:32, (2) filaria negative, (3) hydatid 1:16.

These findings were interpreted as compatible with the diagnosis of paragonimiasis. The positive CFT for hydatid showed the need to keep this diagnosis in mind but the clinical findings, radiological appearances, and normal liver scan argued against this possibility. Although proof of

paragonimiasis was not conclusively established by identifying ova in the specimens, the clinical, radiological, serological, and epidemiological evidence supported this diagnosis and the patient was treated with Bitin-S [Bis (2-hydroxy-3, 5-dichlorophenol) sulfoxide] 15 mg/kg on alternate days for 15 doses. Bitin-S is a new derivative of Bithionol (2, 2'-Thiobis (4, 6-dichlorophenol)).

Two weeks after treatment began a second, nontender swelling developed in the left inguinal region. One month after treatment had stopped both swellings had disappeared, chest x-rays were normal, the ESR had fallen to 4 mm in 1st hour and the eosinophil count was only $0.6 \times 10^9/l$ ($600/mm^3$).

Discussion

Human paragonimiasis is mainly a disease of the lung and the presenting complaints are usually respiratory—such as blood-stained sputum. Extra-pulmonary paragonimiasis may occur in many sites including the pleura, lymph nodes, muscle, and skin, and there can be CNS complications especially with *P. westermani* (Oh, 1967, 1968). In most patients chest x-rays show changes similar to those in pulmonary tuberculosis (Ogakwu and Nwokolo, 1973). Occasionally unilocular or multilocular cysts may be seen (Nwokolo, 1972a). Diagnosis is usually established by demonstrating paragonimus ova in sputum but care must be taken to exclude tuberculosis which may coexist. Ova may also be seen in stools and pleural exudates.

The presentation of our patient was atypical because of the absence of respiratory symptoms and the presence of the soft tissue swellings which are not normally a feature of the disease. Failure to demonstrate the ova in sputum was disappointing but it was not unexpected in view of the absence of respiratory symptoms. The following criteria helped to establish the diagnosis of paragonimiasis: (1) the patient came from an area where paragonimiasis is endemic and gave a history of eating crayfish, (2) the radiological findings and eosinophilia were consistent with paragonimiasis, (3) excluding the doubtful positive Mantoux test (previous BCG vaccination) there was no evidence for tuberculosis, (4) the fasciola CFT (usually positive in paragonimiasis) was positive in serum and pleural aspirate, (5) treatment with Bitin-S was followed by complete clinical, radiological, and haematological cure.

Summary

A 2½-year-old girl recently arrived from eastern Nigeria presented with a soft tissue swelling of the

infraclavicular region. Subsequent investigation revealed a cavity in the left lung associated with a small pleural effusion and leucocytosis with pronounced eosinophilia. Clinical and serological findings were compatible with the diagnosis of paragonimiasis. After a course of Bitin-S the chest x-ray returned to normal, the soft tissue changes disappeared, and the eosinophil count fell.

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A. DEMETRIOU* AND B. M. PHILLIPS
Booth Hall Children's Hospital, Manchester
R. G. HENDRICKSE
Department of Tropical Paediatrics, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA

*Present address: Department of Infectious Diseases, Monsall Hospital, Newton Heath, Manchester

Correspondence to Professor R. G. Hendrickse.

Faecal excretion of oligosaccharides and other carbohydrates in normal neonates

Sugar intolerance is a common cause or complication of diarrhoea in infants. If watery diarrhoea is present from birth, or if chronic diarrhoea impairs growth in the newborn period, a diagnosis of primary alactasia may be considered. Simple tests may be used to assess the carbohydrate (Kerry and Anderson, 1964) and acid content; the presence of $>0.5\%$ reducing substances and pH <6 may