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Lesson of the Week

Katayama fever: an acute manifestation of schistosomiasis

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Katayama fever often mimics the symptoms of malaria in feverish travellers

Schistosomiasis is prevalent throughout sub-Saharan Africa and parts of south east Asia. It is contracted through contact with any fresh (but not salt) water that harbours the intermediate snail host. Katayama fever is a manifestation of acute schistosomiasis. Typical features include fever, an urticarial rash, enlarged liver and spleen, and bronchospasm. The precise pathogenesis of Katayama fever is unknown, but it is thought to be an immune complex phenomenon, initiated by eggs laid by maturing schistosomes. Typically, symptoms occur four to six weeks after infection. Diagnosis is on clinical grounds as there is no definitive serological or immunological test. Conventional antibody titres may take three months or more to become positive.[1] As a result, the diagnosis is often missed, occasionally with disastrous results, such as schistosomal myelopathy, which may result in permanent neurological damage.[2]

Case reports

Sixteen patients were admitted to the Hospital for Tropical Diseases in London between August 1994 and December 1995 with suspected acute schistosomiasis. All had travelled to sub-Saharan Africa. Fourteen had been exposed to fresh water only in Lake Malawi; the other two, travelling together, had swum in a river in a rural area of Mozambique. Symptoms at presentation were non-specific: apart from a history of fever, the dominant symptom was profound lethargy. Only two patients recalled having "swimmers' itch," a transient pruritic rash occurring within 12 hours of cercarial penetration. Symptoms began, on average, 36 days after exposure. Nine patients were febrile on admission and two more developed a fever during their hospital stay. Fourteen had eosinophilia; total eosinophil counts on admission ranged from 0.2 to 12.9 x 10^9/l. Stool microscopy gave negative results in 12 patients—one had ova of *Ascaris lumbricoides*. Ova of *Schistosoma haematobium* were visible in the urine of another. Snips of rectal mucosa were examined for eggs in two cases; both were negative. An enzyme linked immunosorbent assay (ELISA) against soluble egg antigen of *S mansoni* was performed in each case.[3] Two cases had positive serology, and two others were weakly positive.

In most cases the diagnosis of acute schistosomiasis was made on clinical grounds—a history of recent exposure to potentially infected water, physical findings, a negative blood film for malaria, and the presence of eosinophilia in a peripheral blood sample (table 1). Only two cases had unequivocal results. All 16 cases were treated with praziquantel 20 mg/kg body weight, twice daily for three days. Eight also received prednisolone 20 mg/day for three days. All patients subsequently developed evidence to support the diagnosis—15 developed antibodies to soluble egg antigen and one was found to have non-viable ova of *S haematobium* in the urine. The time taken to seroconversion averaged 1.6 months (range 0-6). Seven patients required further courses of praziquantel because of continuing symptoms, persisting eosinophilia, a subsequent rise in the antibody titre, or more than one of these. In several patients symptoms persisted many months after initial treatment (maximum one year).

Table 1—*Symptoms, physical findings, and laboratory investigations in 16 patients with acute schistosomiasis*

	Proportion of patients
Symptom	
Fever	15/16
Lethargy	14/16
Myalgia	11/16
Cough	7/16
Headache	5/16
Anorexia	4/16
Rash	3/16
Swelling	3/16
Physical finding	
Hepatomegaly	4/16
Splenomegaly	4/16
Wheeze	2/16
Urticaria	2/16
Rash	2/16
None	9/16
Laboratory results	
Eosinophilia (> 0.4 x10^9/l)	14/16
Raised bilirubin (> 18 IU/l)	3/15
Raised aspartate transaminase (> 55 IU/l)	6/15
Raised alkaline phosphatase (> 280 IU/l)	7/15
Parasitology:	
Urine positive for *Schistosoma haematobium*	1/15
Stool positive for *S haematobium or S mansoni*	0/16*
Rectal snips	0/2
Positive for soluble egg antigen of *S mansoni* (ELISA)	4/16

*One sample positive for *Ascaris lumbricoides*.

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Discussion

The number of cases of schistosomiasis imported into the United Kingdom, as with malaria, has increased over the past 20 years, principally because of increasing numbers of travellers to sub-Saharan Africa.[4] Acute schistosomiasis occurs in a few infected people; this hospital diagnosed a total of 488 patients with either egg or antibody positive schistosomiasis between August 1994 and December 1995, suggesting that acute symptoms develop in only 3%. We have recently reported a series of 344 cases of confirmed (egg positive) schistosomiasis seen at this hospital between 1991 and 1994. Only two of that series developed symptoms compatible with a diagnosis of Katayama fever.[4]

In each case the presenting symptoms were non-specific—principally fever, lethargy, and myalgia. Equally, physical examination did not reveal any specific features—mild enlargement of the liver and spleen, cough, and wheeze, nine patients having no abnormal physical findings. The severity of the symptoms varied considerably. Ten of these patients were severely incapacitated, while six had minimal symptoms. Many, if not all, might well have been diagnosed as having a viral infection once malaria had been excluded. Acute schistosomiasis, like viral illness, is a self limiting condition even if untreated, and follow up of patients diagnosed as having a viral illness of unknown cause is unusual. Many patients with established schistosomiasis are asymptomatic; the typical symptoms of diarrhoea, abdominal pain, or rectal bleeding (*S mansoni* or *S japonicum*) or terminal haematuria (*S haematobium*) may be absent or develop very slowly.[1] However, without treatment, patients may develop chronic infection leading to portal hypertension with *S mansoni* or transitional cell carcinoma of the bladder with *S haematobium*.[1] We have seen one patient who presented to this hospital with viable ova of *S haematobium* in the urine 33 years after his last exposure to infected water.[5]

Few patients with schistosomiasis develop symptoms suggestive of acute disease, and, as in this series, the diagnosis can be confirmed only retrospectively. We emphasise the importance of taking a clear travel history, particularly with regard to exposure to potentially infected water, and of appropriate referral of anyone suspected of having the disease. Praziquantel is the preferred treatment for patients with schistosomiasis, but it is not widely available. It is highly effective against adult schistosomes but less effective against the immature schistosomula; repeat courses may therefore be necessary. It may exacerbate the clinical condition in acute schistosomiasis, and concurrent administration of prednisolone has been advocated to reduce the risk of reactions.[6] Prednisolone, however, may reduce the efficacy of praziquantel by reducing the serum concentration of the drug.[7]

We suggest that all patients with acute schistosomiasis should initially be treated with a three day course of praziquantel 20 mg/kg body weight, given twice daily under steroid cover (prednisolone 20 mg/day for three days). A second three day course of praziquantel should be given three to six months later to eradicate any schistosomes that may have survived the first course of treatment.

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PATIENTS WHO CHANGED MY PRACTICE

THE CHANCE ENCOUNTER

Practising in occupational medicine, I am constantly reminded to examine the potential for a patient or employee's medical condition to be associated with their work. I suspect that for many of us our only training in this specialty was confined to a single, undergraduate lecture. Even if there are no workplace associations it is seldom that our patients' illnesses are not affected by how, when, and whether they return to work after illness. In Birmingham we were lucky to have had an input into occupational medicine as students, enhanced by a visit to a coal mine. This was certainly one of those doors that opened the mind to the relation between work and health.

We also learnt about Bernadino Ramazzini, professor of medicine at Modena and Padua who, in 1713, gave the following advice in his treatise on occupational medicine, *De morbis Artificum Diatriba:* "On visiting a poor home, a doctor should be satisfied to sit on a three-legged stool, in the absence of a gilt chair, and he should take time for his examination; and to the questions recommended by Hippocrates he should add one more - what is your occupation ?"

There were then two coinciding events. As a medical registrar, I saw two patients with pyrexia who were admitted on the same day. The first was a young boy, with a concerned father, himself a doctor, an occupational physician. The chance to talk about his profession, almost to alleviate his tension around the illness of his son, rekindled a previous spark. The boy's temperature settled quickly and he was discharged. The second was a lady in her early 20s, with lethargy and drenching night sweats. Her history led to a broad spectrum of diagnoses, infective or myeloproliferative. Her examination showed hepatosplenomegaly and cervical lymphadenopathy in addition to her pyrexia. Our initial investigations were non-specific with a microcytic anaemia and toxic blood film. My consultant, with interests in both gastroenterology and haematology suggested a bone marrow trephine. The demonstration of the Leishman-Donovan bodies confirmed a diagnosis of visceral leishmaniasis.

Of course we had asked her profession, but perhaps paid it scant attention. She worked in a troop of dancers and in such an occupation the bite of a female phlebotomus sandfly might be considered a considerable occupational risk when working at night in the southern Mediterranean, where she had been employed some ten months previously.

Few of us know the exact direction of our medical career at the outset, but it seems that we can often find several chance events which guide us towards our destination.—R J L HERON *is an occupational physician in Macclesfield*

We welcome filler articles of up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake,* or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk.