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Experience with Schistosomiasis in Northern Ireland

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SUMMARY

Five cases of schistosomiasis have been recorded in the Belfast City Hospital Histopathology Laboratory over the last three years. The sites of infection have included the colon, bladder, uterus and seminal vesicles. All the infected individuals had visited Africa. Three of them were health care workers. The clinician must maintain a high index of suspicion when treating those with a history of travel and risk of exposure to this infection. Diagnosis is made even more critical as the condition is treatable, and serological markers can identify those with occult infection.

CASE 1: 23 year old physiotherapist

A physiotherapist and colleague had visited Zimbabwe. Upon their return the colleague was diagnosed as having schistosomiasis. The physiotherapist was therefore advised to seek medical attention. Urinalysis revealed the presence of blood, though a 24-hour urine collection was negative for parasites. However a follow-up rectal biopsy contained schistosoma ova. Serological testing was positive. The patient is currently well.

CASE 2: 30 year old civil engineer

This patient swam in Lake Malawi which he had been assured was schistosome - free. He contracted malaria falciparum, schistosomiasis and amoebic dysentery in 1992. These were appropriately treated at that time. Two years later he presented with testicular pain and haemospermia. A urine collection was negative, though cytological examination of his seminal ejaculate showed it to be contaminated with schistosoma haematobium. He is currently schistosomiasis-free and is under the review of the urology service.

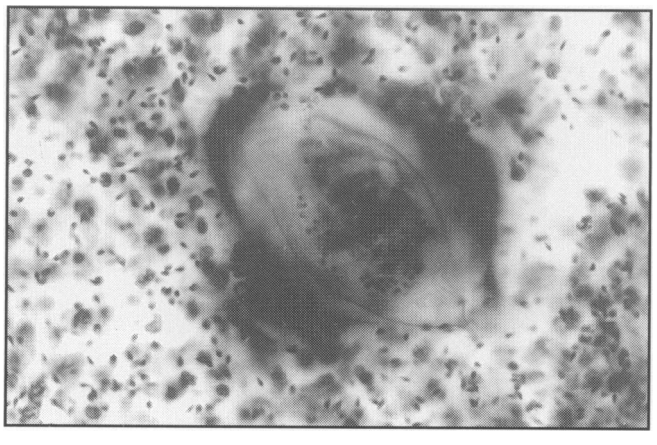

Fig 1. Direct examination of seminal fluid showing schistosoma ova.

CASE 3: 27 year old doctor

As a medical student this doctor had been on an elective in Africa had swum in Lake Malawi. Two years later she experienced several episodes of rectal bleeding. Colonoscopy showed small pale raised lesions which were biopsied and found to contain the ova of schistosoma mansoni. Serological markers were positive for both the

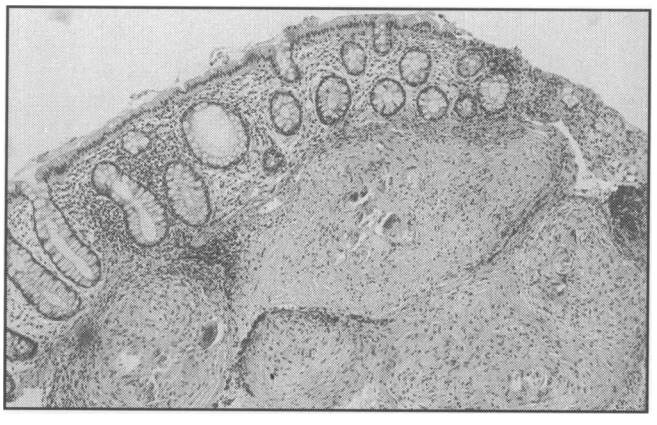

Fig 2. Granulomatous reaction to submucosal schistosoma ova in the large intestine.

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student and a colleague who had also been on the elective. Both were subsequently treated, though the student has since had a recurrence two and a half years later.

CASE 4: 26 year old barman

Whilst travelling from Kenya to Zimbabwe this man and a friend passed through Malawi and swam in the lake. After returning home he was admitted to hospital with epididymo-orchitis and haematuria which was treated with antibiotics. His symptoms returned however, and he was readmitted for investigation. During this admission it was discovered that his friend with whom he had travelled had been diagnosed as having schistosomiasis. Cystoscopy revealed multiple white spots in the bladder mucosa which on biopsy contained multiple schistosoma ova. He is currently under review; he has had no further bladder biopsies.

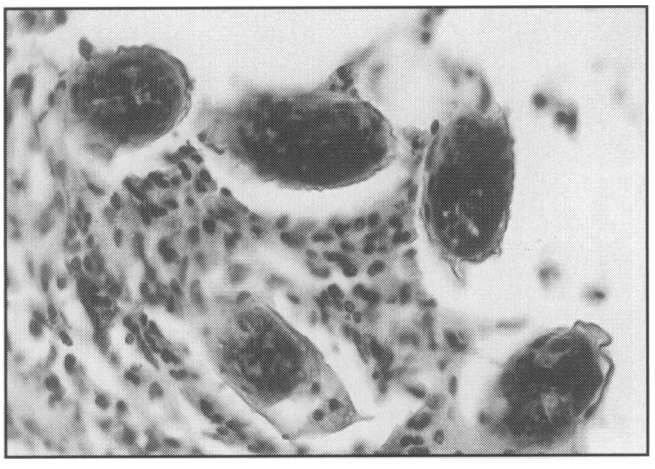

Fig 3. Schistosoma haematobium demonstrating terminal spine.

CASE 5: 40 year old nurse

This nurse had worked in Africa with a friend who was found to have schistosomiasis. This patient only came to medical attention following a diagnosis of Stage IB cervical carcinoma. A radical hysterectomy was performed with subsequent radiotherapy. Examination of the uterus confirmed the presence of a squamous cell carcinoma which had metastasised to regional lymph nodes. Pale seedlings were also noted in the cervical stroma, parametria and serosal aspect of the specimen. Histological sections showed these to be aggregates of schistosoma ova. Serological markers were negative in this case. Unfortunately, despite surgery, chemotherapy and radiotherapy, this patient died.

DISCUSSION

Schistosomiasis is a chronic trematode infection affecting around 200 million people worldwide and is one of the leading causes of morbidity in developing countries.[1] Theodore Bilharz was the first to describe the parasitic blood flukes of the genus schistosoma in Cairo in 1851. Infection occurs while bathing in fresh water contaminated with the larval stage of the worm (or cercaria) which penetrates the skin and enters the venules. It then travels through the systemic circulation to the liver where it matures to form adult worms. These then migrate to the mesenteric veins and lay their eggs (fig 2). Subsequently the eggs are passed into the intestinal lumen and are excreted in the faeces. The life cycle is completed in slow-moving water contaminated by egg-containing faeces. The former hatch releasing larvae which are ingested by the intermediate host, the freshwater snail, where the second larval stage of cercariae develop and emerge in a free swimming form.[2]

Several sub types of schistosoma exist. Infestation of the large intestine is usually due to schistosoma mansoni and schistosoma japonicum. The first is endemic in Africa and central South American countries including the Caribbean islands. The latter is found in Japan, China, the Philippine Islands and the countries of South East Asia. Schistosoma haematobium infects the bladder and only rarely involves the intestine. It is found in Africa, particularly Egypt, and in countries of the near Middle East.

Over the last few years a schistosoma enzyme linked immunosorbent assay (ELISA) against soluble egg antigen has been developed. This can be used to confirm a clinical or histological diagnosis as well or to screen those who may be harbouring occult infection.

Positive results are graded according to their predictive value. The test will not be positive for 6 to 12 weeks after infection. It is in this early period that false negatives will occur.

Out of the five cases reported here, four sites of infection are represented, two in the large bowel and one each in the bladder, uterus and seminal vesicles. In the bowel, schistosomiasis infection can manifest itself both as subserosal and submucosal pseudotumour[3] – a potential pitfall for surgeons, and there is also an association between colonic cancer and chronic schistosomal infection. Pseudopolyps may form in

schistosomiasis with potential for progression to focal mucosal atypia and ultimately carcinoma.[4] Another known association is between urinary tract infection and squamous cell carcinoma of the bladder. It is interesting to note that in case 5 the schistosomiasis infection was in close juxtaposition to a cervical squamous carcinoma. It is therefore postulated that as in the case of bladder and bowel carcinoma, chronic carriage of this trematode may be a co-factor in malignant transformation within the cervix. Studies from Malawi have shown that 60 per cent of gynaecological infections by schistosomiasis have involved the cervix.[5] However, we are unaware of other reports linking schistosome infection to cervical carcinoma.

Several subtypes of schistosoma exist each having its own predilection for a particular infection site. Subtyping is dependent upon the shape of the ova and positioning of its spine (fig 3). Subtyping can be problematic on formalin fixed specimens. A more accurate result is obtained if fresh stool, urine or seminal fluid is examined directly (fig 1). The ova can be clearly seen within the media suspension and there is no crush artefact.

Praziquantel is the drug of choice as it combines successfully effectiveness, broad spectrum activity and low toxicity. The exact regime varies with the subtype of schistosome. However the treatment is not totally effective[6] so careful review is essential.

Health care workers, students and tourists from Ireland work and visit many of the countries with schistosomiasis. Our paper illustrates that this disease should be considered carefully in these groups.

ACKNOWLEDGEMENTS

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REFERENCES

1. Whitehead R. Gastrointestinal and Oesphageal Pathology, 1st Edition, London, Churchill Livingstone 1989; 504-5.
2. Morson B, Dawson I, Day D, Jass J, Price A, Williams G. Morson & Dawson's Gastrointestinal Pathology, 3rd Edition, London, Blackwell Scientific Publications 1990, 491.
3. Prosser J, Kasznica J, Gottlieb L, Wade G. Bilharzial pseudotumours – dramatic manifestation of schistosomiasis: report of a case. *Hum Path* 1994; **25**: 98-101.
4. Ming-Chai C, Chi-Yuan C, Pei-Yu C, Jen-Chun H. Evolution of colorectal cancer in schistosomiasis. Transitional mucosal changes adjacent to large intestinal carcinoma in coleatomy specimens. *Cancer* 1980; **46**: 1661-75.
5. Wright E D, Chiphangwi J, Hutt M S. Schistosomiasis of the female genital tract. a histopathological study of 176 cases from Malawi. *Trans R Soc Trop Med Hyg* 1982; **76**: 822-9.
6. Goldsmith P C, Leslie T A, Sams V, Bryceson A D B, Allason-Jones E, Dowd P M. Lesions of schistosomiasis mimicking warts on the vulva. *BMJ* 1993; **307**: 556-7.