parasitaemias, often asymptomatic, as the children grew and developed their immunity. Without an understanding of malarial immunity and its relatively slow development the clinician is lost in such a locality. Falciparum malaria swamped the *P ovale* and *P malariae* infections also found in west Africa. Nearly every child had clinical falciparum malaria during the first 18 months of life, which resolved with 12·5 mg of pyrimethamine in those days. The development of solid immunity is essential to survival, so radical treatment is not indicated. (I saw Gambian adults with clinical falciparum malaria in only two circumstances; during pregnancy, due to the placenta draining the mother's gammaglobulins, and in people who took antimalaria drugs intermittently, which lowered their natural immunity.) Yanomami Indian children must confront a similar problem in Brazil.

I saw the second chronic malaria syndrome on the other side of Africa, at the New Mulago Hospital in Kampala, Uganda. Today it is called hyperimmune malarious splenomegaly and is characterised by marked hepatosplenomegaly, raised concentrations of IgM immunoglobulins and malaria fluorescent antibody titres, and hepatic sinusoidal lymphocytosis. Our initial report appeared in this journal.[2] In Brazil we first localised this syndrome among bank dwellers on the River Ituxi, a tributary of the Purus River. In this study and in studies from Uganda and New Guinea the syndrome showed a familial tendency, and it has been linked to group DR2 histocompatibility antigen in New Guinea. Usually the syndrome resolves with a prolonged course of antimalarial treatment.

There is much evidence that Burkitt's tumour, the commonest childhood malignancy in Kampala, is the result of Epstein-Barr virus acting on a lymphatic system that has been activated by malaria infection. Recently a physician told me that he had two histologically proved cases from the remote Amazonian state of Acre. Curiously, quartan nephrosis, which was so extensively studied by Giglioli in Guyana, has yet to be reported from Brazil. Foci of *P malariae* are present and it will only be a matter of time before we see reports of nephrotic syndrome due to the specific malarial immunoglobulin damaging the glomerular basement membrane.[3]

Unfortunately our growing knowledge of these subtle syndromes has not been accompanied by equal progress in malaria control. *A gambiae* invaded Brazil from Africa before the second world war but was fortunately eradicated by the old vector control measures. Otherwise—so I teach, at least—Brasília would never have been built. Progress with a malaria vaccine is slow. For this decade we will have to rely on vector control (larvicideal and larviparous fish, insecticide spraying, mosquito nets impregnated with pyrethroid, and chemoprophylaxis.

1 Marsden PD. Growing problem of malaria. *BMJ* 1989;299:1328-9.
2 Marsden PD, Hutt MSR, Wilks NE, Voller A, Blackman V, Shah KK, *et al.* An investigation of tropical splenomegaly at Mulago Hospital, Kampala, Uganda. *BMJ* 1965;i:89-99.
3 Marsden PD. Chronic malaria syndromes and Brasil. *Rev Soc Bras Med Trop* 1990;23:193-6.

Lesson of the Week

Lesions of schistosomiasis mimicking warts on the vulva

P C Goldsmith, T A Leslie, V Sams, A D B Bryceson, E Allason-Jones, Pauline M Dowd

Schistosomiasis may present as warty lesions on the vulva. Take a travel history and a biopsy to make the diagnosis

Schistosomiasis (bilharziasis) is a chronic trematode infection affecting at least 200 million people world wide. Schistosomiasis due to *Schistosoma haematobium* is endemic in Egypt and occurs in most parts of Africa and the Middle East, areas now much favoured by tourists. Infection occurs after bathing in infected fresh water, and symptoms may not appear until many months—sometimes years—after exposure to the parasite. Schistosomiasis can present with lesions on the genitalia that may be mistaken for viral warts. In patients presenting with atypical warts a travel history and biopsy are important as early treatment of schistosomiasis is effective and prevents the serious long term complications of inflammation and fibrosis of the urinary tract.

In this paper we describe three patients living in the United Kingdom who presented with pruritic papules on the vulva. Schistosomiasis was diagnosed on biopsy, and there was no other clinical evidence of infection. On direct questioning all three gave a history of swimming in fresh water in Africa.

Case histories

The first patient was a 29 year old woman who initially presented to a genitourinary medicine clinic with a six month history of an itchy patch on the vulva; she was otherwise well. On examination she had a discrete raised lesion on the left labium minus (fig 1). Results of an infection screen including microscopy and culture for yeasts were negative. Punch biopsy of the lesion under local anaesthetic showed granuloma formation and schistosoma ova with the characteristic terminal spines (fig 2). Investigations revealed a normal blood eosinophil count, a serum IgE concentration of 470 kU/l (normal 0-120 kU/l), and a positive result on the schistosoma enzyme linked immunosorbent assay (ELISA) against soluble egg antigen. On direct questioning she said that she had swum daily for three weeks in Lake Malawi while on holiday 18 months before.

The second patient was a 26 year old woman who was referred to the gynaecologist with a two month history of an itchy wart on the vulva. Examination showed a 1·5 cm papillomatous area on the right

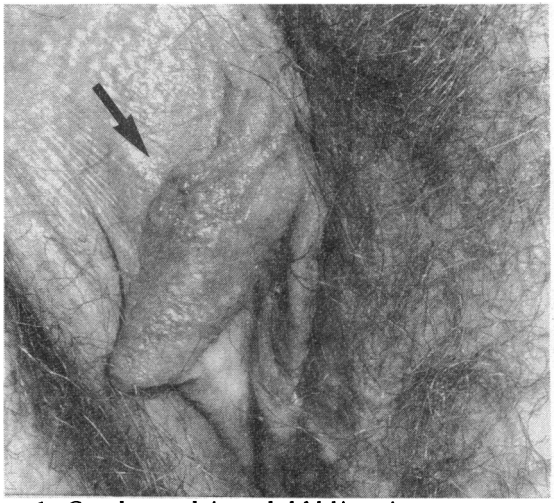

FIG 1—*Granulomatous lesion on the left labium minus*

Correspondence to:
Dr Dowd.

BMJ 1993;307:556-7

Department of Dermatology, University College London Medical School, Middlesex Hospital, London W1N 8AA
P C Goldsmith, *research registrar*
T A Leslie, *research registrar*
Pauline M Dowd, *senior lecturer*

Department of Histopathology, University College London Medical School, London WC1E 6AU
V Sams, *consultant*

Hospital for Tropical Diseases, London NW1 0PE
A D B Bryceson, *consultant*

Department of Genitourinary Medicine, University College Hospital, London WC1E 6AU
E Allason-Jones, *consultant*

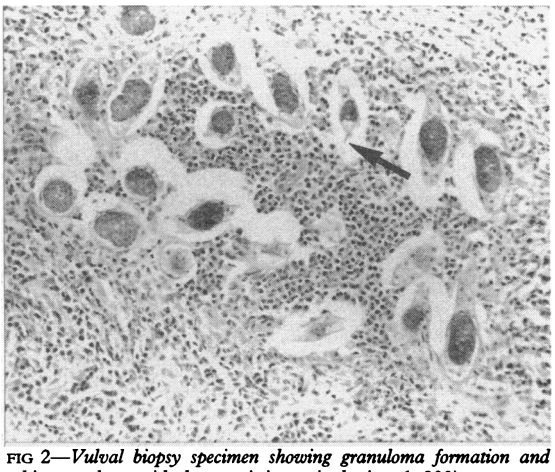

FIG 2—*Vulval biopsy specimen showing granuloma formation and schistosomal ova with characteristic terminal spines (×300)*

labium minus. Biopsy revealed schistosoma ova and granulomas. On direct questioning the patient said that she had been on honeymoon to Lake Malawi two years earlier and had swum in the lake.

The third patient was a 27 year old woman who initially presented to a genitourinary medicine clinic with a seven month history of a painful pruritic area on the vulva. Examination showed a firm ulcerated papule on the left labium minus. Biopsy revealed schistosoma ova surrounded by granulomata. She had travelled around west Africa three years earlier and had swum in a fresh water lake.

The patients were investigated for further evidence of schistosomiasis. Microscopy of urine and stools did not show ova, and blood eosinophil count was normal in all three. They were treated with praziquantel 40 mg/kg orally daily for three days. In each patient symptoms resolved within two weeks, and on examination six weeks later the vulva appeared normal.

Discussion

It is clear from these patients that the genital manifestations of schistosomiasis can occur some time after the initial exposure to *S haematobium* and can occur independently of the more well known symptoms of disease of the urinary tract, such as haematuria.

Infection with *S haematobium* occurs when bathing in fresh water, when the skin is penetrated by larvae (cercariae) emitted by the snail intermediate host. From the skin the parasites migrate through the lungs and liver and finally lodge in the pelvic veins, where they produce ova which become trapped in the tissues, triggering a granulomatous inflammatory response. Infection initially may be asymptomatic, later haematuria, pyelonephritis, hydronephrosis, and renal failure may ensue.

The dermatological manifestations of schistosomiasis are several.[1] A few hours after exposure to schistosoma, patients may develop "swimmer's itch." This is a pruritic papular eruption due to penetration of the epidermis by cercariae and is commoner after exposure to non-human flukes. Four to eight weeks later urticaria may occur and be associated with fever, malaise, arthralgia, and diarrhoea. Months and years after infection granulomatous genital and perianal wart-like lesions may develop, as in the three patients reported here.[2] This manifestation is familiar to doctors practising in areas where *S haematobium* is endemic.[3] Very rarely, ectopic granulomatous reactions occur on the skin of the trunk as the result of ova deposition from the circulation.[4-7] The treatment of schistosomiasis with a single dose of praziquantel 40 mg/kg effects a cure in 75% to 100% of patients[8] and our practice is to give this dose daily for three days. While schistosomiasis remains endemic in so many parts of the world prevention of infection is of vital importance. Despite warnings, holiday makers will continue to bathe in infected fresh water, and these patients illustrate how, many months later, schistosomiasis may present on the genitalia. Doctors in Britain need to be aware of this.

We thank Miss A A Boutwood, consultant gynaecologist, and Dr C M Ridley, consultant dermatologist, for giving us permission to report on one of the patients. The figures are reprinted with kind permission of the *Journal of the Royal Society of Medicine*.[9]

1 El-Mofty AM, Cahill KM. Cutaneous manifestations of schistosomiasis. *Derm Trop* 1964;3:157-61.
2 Mckee PH, Wright E, Hutt MS. Vulval schistosomiasis. *Clin Exp Dermatol* 1983;8:189-94.
3 Adeymi-Doro FA, Osoba AO, Junaid TA. Perigenital cutaneous schistosomiasis. *Br J Vener Dis* 1979;55:446-9.
4 Cahill K, el-Mofty AM. Extra genital cutaneous lesions in schistosomiasis. *J Trop Med Hyg* 1964;13:800-2.
5 El-Zawahry M. Schistosomal granuloma of the skin. *Br J Dermatol* 1965;77:344-8.
6 Findlay GH, Whiting DA. Disseminated and zosteriform cutaneous schistosomiasis. *Br J Dermatol* 1971;85:98-101.
7 Saxe N, Gordon WS. Schistosomiasis of the spinal cord and skin. *S Afr Med J* 1975;49:57-88.
8 Davis A, Biles JE, Ulrick AM. Initial experiences with praziquantel in the treatment of human infections due to Schistosoma haematobium. *Bull WHO* 1979;57:773-9.
9 Leslie TA, Goldsmith PC, David PM. Vulval schistosomiasis. *J R Soc Med* 1993;86:51.

(Accepted 5 May 1993)

ANY QUESTIONS

Is there any evidence that removing excessive bedclothes and using a cooling fan for patients with fever provides any therapeutic benefit?

Fever results from the effect on the hypothalamic temperature regulation centre of interleukins released into the circulation in response to triggers, which include endotoxaemia and phagocytosis. Although there is no obvious benefit to the patient from fever, it seems reasonable to conclude that such a response would not have evolved had it no protective value—the more so when you consider that in certain circumstance it can definitely be harmful. By this logic, the risk of convulsions in small children with fever is likely to be more than compensated for by a survival advantage to the species, which must operate before reproductive age.

There is clear evidence that reduction of fever in small children is beneficial in reducing the risk of convulsions, although in particularly susceptible children this may require more than merely removing bedclothes and fanning. High temperatures at any age tend to produce delirium, which is distressing to patients and relatives and tends to lead to cardiac failure in patients with limited cardiac reserve. Above the age of about 10, however, temperatures of between 37°C and 40°C do no obvious harm and their abolition can certainly confuse clinical assessment. For example, the diagnosis of falciparum malaria has been missed because the patient had taken aspirin and therefore presented without fever. Furthermore, some patients find the sweating produced by antipyretic drugs, followed by shivering as their effect wears off, more unpleasant than the fever itself. A gentler approach with removal of bedclothes and fanning is usually preferred by the patient and does little to obscure the clinical picture, ensuring that other measures of undoubted therapeutic benefit can be applied most appropriately.—C J ELLIS, *consultant physician, Birmingham*