Management of onchocerciasis

Personal observations

J. L. MAHONEY

Summary

During a 12-month period (1977 - 1978) of employment in the river forest area of the Ivory Coast, an isolated area hyperendemic for onchocerciasis, a unique opportunity arose to study the disease in depth. Personal observations and experiences with the disease did not necessarily correlate with textbook statements.

Although onchocerciasis may involve almost any area of the body it more commonly involves the skin, eyes, lymphatics and groin area. The disease does not appear to cause premature or direct death, but is often acutely and chronically disabling. Diethylcarbamazine and suramin are effective in preventing disabling complications and in diminishing or controlling the progression of complications, but are nephrotoxic.

Surgery is utilized to excise microfilaria-producing nodules in order to minimize or control disease progression and for the repair of the frequently occurring complication of inguinal or femoral hernias and hydroceles. A high percentage of patients had microfilarial eye infiltrates but blindness was uncommon. The disease should therefore be known as 'river eye disease' rather than the current 'river blindness'.

There is no known method of effective prevention of the disease that is acceptable on a long-term basis.

Onchocerciasis, a major tropical disease, is widespread across central and west Africa, central and northern South America and in Yemen. It involves an estimated 40 million people living in these areas. The World Health Organization has included onchocerciasis in its 5-year programme for research and training in the 5 major tropical diseases together with schistosomiasis, leprosy, trypanosomiasis, malaria and leishmaniasis.

Onchocerciasis occurs in populations living adjacent to rapidly flowing rivers in rural and remote areas where developed medical facilities and disciplined medical investigators rarely exist. It has been a neglected disease. The disease affects the eyes causing impaired vision or, infrequently, blindness. It is known as 'river blindness'. It does not cause death and autopsy studies giving insight into the pathogenesis of the disease have seldom been performed. As yet there is no safe prophylaxis or effective therapeutic approach.

Clinical observations

The disease manifests itself in a wide variety of ways. It can be classified into four groups, based on clinical manifestations and pathogenesis: (i) dermatological; (ii) ophthalmological; (iii) lymphatic; and (iv) pulmonary. Dermatologically it produces nocturnal, intermittent, recurrent or constant pruritus due to microfilarial activity within the dermal layers of the skin; this is the most distressing persistent symptom of the disease. Nodules containing adult worms may be located in the skin, subcutaneous tissue or deep muscles. Maculopapular or excoriated erythematous skin eruptions are common. Advanced stages of the disease lead to loss of collagenous and elastic tissue with skin atrophy and lichenification or the 'peau d'orange' appearance of the skin. Itching occurs in more than 95% of patients with onchocerciasis and may be disabling.

Ophthalmological onchocerciasis causes conjunctivitis which is often intermittent and recurrent. Fine punctate corneal lesions in asymptomatic patients are common, and require magnification for identification. The more advanced corneal infiltrates with keratolysis occur infrequently and are readily apparent to the casual observer. Glaucoma, iritis, uveitis and retinitis are seen only in advanced eye disease and may ultimately progress to blindness.

Lymphatic involvement commonly involves the thoracic duct and the inguinal regions but may involve all extremities. Lymphatic stasis due to microfilarial occlusion in the thoracic and inguinal lymphatic vessels is a common cause of lower thoracic and lumbar backache. Backache was observed in more than 90% of patients with onchocerciasis in various stages of the disease, and was often a presenting symptom. Lymphatic stasis in the inguinal and femoral regions with loss of collagen and elastic tissue and with skin atrophy leads to the characteristic 'hanging groin' or redundancy of skin in the inguinal, genital and groin areas. This disorder occurs almost as often as the ophthalmological disorders and because of this it has been suggested that the disease be called 'hanging groin disease' rather than 'river blindness'.

Pulmonary complications manifested as tropical filarial pulmonary eosinophilia are less commonly seen but can be disabling. Microfilarial infiltrates in pulmonary tissue must be considered in the differential diagnosis of chest symptoms in areas where onchocerciasis is prevalent.

Area description

These observations and studies were performed at the Taabo Hospital which aims to provide health care to expatriates and Black employees involved in the construction of a hydro-electric dam on the Bandama River 165 km north of Abidjan and their families as well as the surrounding indigent population. The hospital is adjacent to the relatively fast-flowing Bandama River. This is an ideal breeding area for the black fly (Simulium damnosum). Human infestation was found to be directly proportional to the density of black fly activity. The Taabo village of Black river fishermen which was the focus of our study of onchocerciasis is located across the river from the hospital. It has a population of 2682, all of whom were found to be infected with onchocerciasis, excluding infants under 3 months of age. Life expectancy in this
The population had periodic symptoms of onchocerciasis. Onchocerciasis was also diagnosed in 7 expatriates employed on the hydro-electric project who had been living in the area for between 15 months and 2 years.

**Medical-surgical approach**

An average of 125 Black patients and their families were treated daily at the Taabo Hospital, of which approximately 12 had onchocerciasis. A minimum of 30 - 35 hernia and hydrocele cases were operated upon monthly. Onchocerciasis nodules were removed surgically in the outpatient department. Approximately 2 - 3 hydroceles containing microfilariae were aspirated daily. (Hydrocele fluid on first aspiration is routinely analysed for microfilaria.) At least 3 - 4 patients with inguinal and femoral hernias, often enormous in size and reaching to the knees, were seen daily. Of this group approximately 8% were strangulated, and this was often the primary reason for seeking medical care. A diagnosis conclusive of onchocerciasis was able to be made in 60% of suspected cases from the iliac crest skin snip demonstrating microfilariae in the specimen, or by the finding of onchocerciasis nodules which contained adult worms. The remaining patients were treated on a presumptive diagnostic basis using the Mazzotti test correlated with clinical findings. Microfilariae may be found in the lungs, urine, blood, liver, spleen, vagina, sputum, kidneys and skin. Skin snips are often negative in patients who have nodules containing living adult worms. The blood eosinophil level may be normal or near normal with a positive skin snip. The Mazzotti test may be negative with a high eosinophil level and nodules with live adult worms. The diagnosis therefore may be elusive and difficult to establish as conclusive or presumptive.

Two highly effective filaricidal drugs, diethylcarbamazine (DEC) to destroy microfilariae and suramin to destroy the adult worms or microfilariae, are available. DEC has no effect on the adult worms and must be used with caution, beginning with small doses because the death of the microfilariae releases a toxin that may result in a severe humoral reaction based on the response to the immune complex. Encephalitis or even a fatal reaction to the drug has been reported. Suramin and DEC are nephrotoxic and must be used with caution in the presence of renal impairment. DEC has recently been used topically.

It is illogical to treat the local population en masse with suramin, as this probably eliminates any natural immunity towards onchocerciasis that they may have acquired. It has been shown that an alternate method for control of the disease without the use of suramin is to give the individual a prophylactic dose of DEC or to administer 200 mg of DEC twice daily for 5 days at 3-month intervals, with reduced dosages for children. It is reported that the adult worms can survive in the body for 3 years. Microfilariae are known to reach 50% of their previous concentrations 1 year after DEC therapy when suramin is not used, hence to obtain a cure, as in expatriates who have onchocerciasis and are leaving a hyperendemic area, suramin is usually administered after DEC.

Patients with a conclusive or presumptive diagnosis of onchocerciasis in an endemic or hyperendemic area are routinely treated with 6,255 g of DEC over a 3-week period. Administration of the drug is begun in small dosages starting with 25 mg as a test dose, increasing the dosage to 25 mg twice daily after 3 days and then at 2-day increments to 50, 100 and ultimately 200 mg twice daily. Initial reaction to DEC may be severe with intense allergic reactions to the toxin released by the destroyed microfilariae. Pruritus may be intense during therapy and is always present. Severe reactions to the drug are relieved dramatically by steroids. Antihistamines are administered routinely with DEC as well as with suramin, since pruritus develops during the administration of both drugs. Suramin is begun immediately after completing the DEC course if a cure is desired, initially using a test dose of 100 mg intravenously followed after 72 hours by 1.0 g weekly for 6 weeks. A creatinine clearance test is performed before administration of suramin. If impaired renal function is present it may be advisable to avoid the use of suramin and to treat the patient with repeated dosages of DEC 200 mg twice daily every 3 months for 3 years, as DEC is probably less nephrotoxic than suramin.

Before DEC therapy all patients are examined carefully for onchocerciasis nodules, particularly in the vicinity of the iliac crests and creases, buttocks, abdomen, head and neck. These are removed before therapy because adult female worms periodically release large numbers of microfilariae. If ophthalmological lesions are not present DEC therapy is given. If ophthalmological keratitis and particularly if glaucoma with uveitis or iritis is present, DEC must be used with considerable caution as the humoral reactions in the eye may be intense due to the destruction of the microfilariae. Steroids are combined with DEC in these cases, usually beginning with prednisone 10 mg 4 times daily during the 3-week period of DEC therapy. If glaucoma is present appropriate diuretics and pilocarpine eyedrops are combined with therapy and continued until intraocular tension is normal. If keratitis with corneal opacities or punctate lesions in the cornea is present and has not destroyed the cornea, the response of these lesions to a combination of oral DEC and topical steroids is dramatic, with clearing of the lesions in 3 to 6 weeks.

Corneal grafting procedures are reported to be effective in certain cases of onchocerciasis but unfortunately an ophthalmologist was not available to treat the infrequent advanced keratitic lesions seen in Taabo. Conjunctivitis from onchocerciasis without corneal or intra-ocular lesions is effectively controlled with DEC and topical steroid ophthalmic drops.

When suramin is used as a 'cure', two further 5-day courses of DEC, 200 g twice daily for 5 days, are given beginning 1 week after completion of suramin therapy and separated by 2-week intervals to destroy residual microfilariae. Antihistamines are included with the final course of DEC because pruritus invariably occurs. Prior to hernia and/or hydrocele surgery a structured course of DEC therapy is given, as a significant percentage of hernias and hydroceles recur with untreated onchocerciasis (Mama Yamo Hospital, Kinshasa, Zaire — unpublished data). The eosinophil level decreases rapidly with therapy. This is particularly apparent with the use of DEC for tropical pulmonary filarial eosinophilia. It is important, however, to have cleared the body of intestinal helminths and any other parasites before treatment for onchocerciasis.

Unfortunately, mass prophylaxis of onchocerciasis is not practical or available, nor is the use of spray control of the infected areas with filaricides. Mass prophylaxis, as with malaria, results in drug resistance and drug sensitivities on a long-term basis. Spraying with filaricides is enormously expensive and the phenomenon of reinvasion and reinfection of the population by _S. damnosum_ females follows its use.

**Discussion**

The classification of the symptomatology of onchocerciasis discussed above allows more effective medical-surgical therapy. The diagnosis of onchocerciasis, although often obvious and easily made, is at times elusive and difficult to establish. Because of its prevalence in recognized endemic and hyperendemic areas...
Pancreatic abscess and computed tomographic scanning

R. H. C. MING, B. S. H. CHIE-FOR, I. SEGAL, B. EPSTEIN, D. TANNE

Summary
A 42-year-old man presented with acute haemorrhagic pancreatitis. He developed all the major complications of acute pancreatitis including a pancreatic abscess which was shown to progress on serial computed tomography (CT) scans. The diagnostic value of CT in acute pancreatitis is emphasized.

Pancreatic abscess is an uncommon but potentially lethal complication of pancreatitis.1-3 Presentation may vary from mild to fulminating. The advent of computed tomography (CT) has markedly improved diagnostic accuracy in assessing pancreatic lesions. This report reflects the wide clinical spectrum of acute pancreatitis and demonstrates the value of the CT scan in the diagnosis of pancreatic abscess.

Case report
A 42-year-old man was admitted to hospital with a 3-day history of sharp epigastric pain radiating to the back. The pain had developed approximately 24 - 48 hours after an alcohol binge. The patient was a chronic alcoholic and had had previous episodes of epigastric pain of a similar but milder nature. He was in obvious distress, restless and sweating, with a tachycardia and no recordable blood pressure. The heart was normal and the lung fields were clear. A differential diagnosis of acute pancreatitis or intestinal obstruction was made and resuscitation instituted.

Treatment was conservative and consisted of intravenous fluid replacement, nasogastric suction and 2-hourly observation of vital signs.

Investigations
The haemoglobin concentration was 16.9 g/dl, the