Statistical footnote

There are several important aspects in which trials of this type differ from classical multicentre therapeutic studies.⁷ Firstly, it is not reasonable to allocate randomly patients to intervention or non-intervention groups; such a device would be very difficult to organise and would entail an unnatural use of the system, but, more importantly, the object of such an educational intervention is the doctor rather than the patient. With doctors as the "experimental unit" some adjustment is necessary to the p values associated with tests on patient statistics; this design effect is often ignored⁸ but is fairly simple to implement.^{9,10}

Secondly, the use of a baseline control group required special attention to ensure that patient mix and accrual were the same as in the test period and that no changing outside factor had influenced the results. The awareness of being studied can improve behaviour (the Hawthorne effect) but the staggered design in mode B hospitals corrected for this.

Finally, the significance of pooled results over centres was calculated by means of the stratification technique for pooling clinical trials described by Collins *et al* (1985).¹¹

References

- 1 de Dombal FT, Leaper DJ, Staniland JR, *et al*. Computer-aided diagnosis of acute abdominal pain. *Br Med J* 1972;ii:9-13.
- 2 Wilson DH, Wilson PD, Walmsley GL, *et al*. Diagnosis of acute abdominal pain in the accident and emergency department. *Br J Surg* 1977;64:250-4.
- 3 Gunn AA. The diagnosis of acute abdominal pain with computer analysis. *J R Coll Surg Edinb* 1976;21:170-2.
- 4 Boom R. Improvement of internist's diagnostic performances by systematic computer evaluations. *Proceedings of Medinfo '80*. Amsterdam: N Holland, 1980:1760.
- 5 Wilson PE, Horrocks JC, Yeung CK, *et al*. Simplified computer-aided diagnosis of acute abdominal pain. *Br Med J* 1975;iii:73-5.
- 6 Bouchier IAD, de Dombal FT. Studies co-ordinated by the research committee of the World Organisation of Gastro-Enterology. *Scand J Gastroenterol* 1984;19(suppl 95).
- 7 Spiegelhalter DJ. Evaluation of clinical disease aids, with an application to a system for dyspepsia. *Statistics in Medicine* 1983;2:297-316.
- 8 Pozen MW, D'Agostino RB, Selker HP, *et al*. A predictive instrument to improve coronary-care-unit admission practices in acute ischemic heart disease. *N Engl J Med* 1984;310:1273-8.
- 9 Cornfield J. Randomisation by group; a formal analysis. *Am J Epidemiol* 1978;108:100-2.
- 10 Cochran WG. *Planning and analysis of observational studies*. New York: Wiley, 1983.
- 11 Collins R, Yusuf S, Peto R. Overview of randomised trial of diuretics in pregnancy. *Br Med J* 1985;290:17-23.

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Lesson of the Week

Rest pain and leg ulceration due to syphilitic osteomyelitis of the tibia

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Many patients with peripheral vascular disease have rest pain and intractable ulceration of the skin. These findings may also be present in late syphilis. We report on a patient with proved peripheral vascular disease, treated by bypass surgery, whose pain was caused by syphilitic osteomyelitis of the tibia.

Case report

An 81 year old woman had initially presented seven years previously with intractable ulceration of the left leg and foot. She had two ulcers, one on the dorsum of the foot and one on the lower leg, about 3 cm in diameter, with well defined edges but not punched out to any depth and lacking a classic "wash leather" base.¹ No pulses were palpable below the femur on vascular examination. She complained of a continuous deep seated pain in the leg.

Chemical sympathectomy was performed in an attempt to improve the cutaneous circulation. The ulceration persisted, and amputation was considered but was refused by the patient. Femoral arteriography showed a superficial femoral artery block with good run off from the popliteal artery, and femoropopliteal bypass grafting was performed. This failed to improve the leg symptoms and eventually ceased to be patent.

The patient was referred for an orthopaedic surgical opinion because of the finding of extensive areas of mixed osteoporosis and sclerosis in the tibia (figure). Serological tests for syphilis were performed and yielded a positive result for the Venereal Diseases Reference Laboratory test (titre 1/8), *Treponema pallidum* haemagglutination antibody, and fluorescent treponemal antibody (absorption). There was no evidence of neurosyphilis so

Late syphilis should be considered in patients with leg ulceration and rest pain

Anteroposterior and lateral radiographs, showing mixed lytic and sclerotic syphilitic osteomyelitis of the tibia.

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lumbar puncture was not performed. She had no signs of congenital syphilis. She had been married twice, the second time to a sailor, and had been sexually abused by a cousin at the age of 8. She had had one miscarriage but no children. Although not relevant in this case, it is known that syphilis may result from sexual abuse of elderly patients.²

A course of tetracycline (the patient was allergic to penicillin) resulted in resolution of the pain and ulceration over four months. There was no Herxheimer reaction.

Discussion

This patient, with peripheral vascular disease evident on arteriography, had skin ulcers typical of a severely ischaemic leg, which were in fact probably gummatous lesions. Only a minority of patients with untreated syphilis develop late sequelae, about 15% having gummatous lesions with skin and bone among the possible sites.³ The tibia is the bone most commonly affected.⁴

Syphilitic osteomyelitis starts in the metaphysis, and the earliest radiological change is a periostitis.⁵ The periosteal reaction causes a build up of new bone on the anterior border of the tibia, resulting in a sabre tibia appearance. As the disease progresses to the cortex and medulla lytic areas of bone destruction develop. There is a variable degree of new bone formation, which results in dense areas of

sclerosing osteitis. The degree of sclerosis may reflect relative ischaemia due to syphilitic arteritis.⁵ Clinically, local pain and variable swelling are seen.⁶ The osteomyelitis may penetrate to the skin and produce a punched out ulcer with bone in the base, but the lesion may be superficial or even heal up and may be easily confused with venous ulcers.⁷

This case emphasises the importance of making a precise diagnosis in all cases of intractable leg ulceration before embarking on surgical or prolonged medical treatment for the ulcer.

References

- 1 Rains AJH, Ritchie HD. *Bailey and Love's short practice of surgery*. 18th ed. London: H K Lewis, 1981:46, 136-8.
- 2 Luke EA. Syphilis in the elderly. *JAMA* 1985;254:1722.
- 3 Holmes KK, Mardh PA, Sparling PF, Weisner PJ. *Sexually transmitted diseases*. 1st ed. New York: McGraw Hill, 1984:301.
- 4 Francis HC, Kampmeier RH. The bone lesions in acquired tertiary syphilis. *South Med J* 1943;36:556-9.
- 5 Aegerter E, Kirkpatrick JA. *Orthopaedic diseases*. 4th ed. Philadelphia: WB Saunders, 1975:273-7.
- 6 Willcox RR. *Textbook of venereal diseases and treponematoses*. 2nd ed. London: Heinemann, 1964:193-7.
- 7 Lomholt G. Syphilis, yaws and pinta. In: Rook A, Wilkinson DS, Ebling FJG, eds. *Textbook of dermatology*. Vol 1. 3rd ed. Oxford: Blackwell Scientific Publications, 1979:719-23.

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Third World Issues

A primary health care project in the Amazonian jungle of northern Peru

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During the past eight years the Aguaruna and Huambisa Council, a jungle Indian group, has developed a programme providing primary health care to 35 000 inhabitants of 22 000 sq km of upland rain forest, an area the size of Wales. The Aguaruna and Huambisa people inhabit an isolated region of northern Peru, most living on the banks of the Marañon, Chiriaco, Cenepa, Nieva, and Santiago rivers. Their zone is defined to the north by a disputed border with Ecuador and to the south, east, and west by mountain ranges.

For centuries these groups were famous for feuding and intertribal headhunting raids, though they were prepared to unite temporarily to repel a common enemy. Their reputation for fighting and their geographical isolation ensured that they were relatively undisturbed until the 1950s, when various missionary groups pioneered incursions into the area. Over the past 30 years their lifestyle has changed dramatically. Previously, isolated family groups lived deep in the jungle. Xenophobia and a shifting complex of alliances and feuds compounded an isolation that protected their environment; ensured adequate jungle for hunting, food gathering, and "slash and burn" agriculture; and inhibited the spread of

infectious diseases.¹ During the 1950s and '60s, largely under the influence of missionaries, the tribes were settled together along the river banks around bilingual schools,² and this new way of life gave rise to several health problems. Contaminated water and lack of sanitation led to an incidence of intestinal parasites of almost 100%.³ Infectious diseases, particularly the common cold, whooping cough, and measles, caused deadly epidemics, and the denser population exhausted farming land and depleted game stocks.

In the early 1970s a Spanish development group pioneered a health programme, which was developed by the Aguaruna and Huambisa Council after it was formed in the mid-1970s. Each of the 92 communities affiliated to the council elects a delegate to attend biannual council meetings, at which programmes of economic development, education, mechanical services, legal aid, and health are planned. The council's most advanced programme is undoubtedly its health programme. Based around community health promoters, who now total 98 men and women, a network has been built up that serves each river and the entire zone.

Health promoters

Communities elect their promoters and agree to build a health post from natural materials, to start a communal fund for medicines, and to help the promoters maintain their home and prepare fresh jungle clearings for their staple crops. In turn, promoters agree to attend patients daily in the health post from 8 am until 12 noon and to be available for emergency cases at all times. This daily curative work meets a considerable need, and the promoters have to be competent in it so that they command the authority

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