

under anaesthesia has been reported: a cardiac arrest occurred shortly after a femur of a 12 year old achondroplastic dwarf was shortened by 2 cm. Multiple fat emboli were shown at necropsy.<sup>3</sup>

Certain features peculiar to our case contributed to the outcome. The patient had undergone previous operations to release his hip contractures which had resulted in dense fibrous thickening of the posterior capsule. Thus closed manipulation rather than surgical release was performed. The patient's immobility had made the femurs osteoporotic. This combination of osteoporosis and dense fibrous thickening predisposed the femoral neck to fracture after manipulation. The dense fibrous tissue around the joint capsule would have prevented the escape of the bone marrow, which was thus forced under pressure into the venous system. This hypothesis is supported by the necropsy finding of extruded marrow from the left hip capsule.

The treatments that have been suggested for the fat embolism syndrome include heparin, steroids,

aprotinin, dextran 40, and alcohol. None would have been likely to have influenced events in this case, in which the problem was obstruction of the pulmonary vascular bed rather than tissue damage from free fatty acids or platelet lysis.

Anaesthetists and orthopaedic surgeons should be aware of this rare but potentially fatal complication of closed joint manipulation, particularly in patients with osteoporosis.

We thank Mr J F Taylor for permission to report details of his patient.

- 1 Gurd AR, Wilson RI. The fat embolism syndrome. *J Bone Joint Surg [Br]* 1974;56:408-16.
- 2 Hayley SR. The fulminant fat embolism syndrome. *Anaesth Intens Care* 1983;11:162-6.
- 3 Gurd A, Israeli A, Horoszowski H. Fatal complication of femoral elongation in an achondroplastic dwarf—a case report. *Clin Orthop* 1984;185:69-71.

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## Tattoos: a lasting regret

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In 1969 it became illegal to tattoo people under 18 years old professionally.<sup>1</sup> To investigate whether this legislation had been enforced we conducted a survey of tattooed patients attending a plastic surgery outpatient clinic during 1986-9. We also looked at the efficacy of trichloroacetic acid for removing tattoos.<sup>2</sup>

### Patients, methods, and results

We interviewed 95 new patients presenting with tattoos at the plastic surgery outpatient clinic. We asked them how they had received their tattoos, how old they had been at the time, and why they wanted them removed. Most were aged 15-34. Twenty nine were men and 66 women, and they had a total of 104 tattoos. Women were more likely to have amateur tattoos than men. The most vulnerable age for obtaining both amateur and professional tattoos was under 18 (table). Forty three women and 14 men had had amateur tattoos done under the age of 18. Seventeen women and 13 men had had professional tattoos done while under 18.

The reasons given for wanting the tattoos removed were cosmetic (68 patients), change of job (16), and change of partner (11). The parents of 53 of the patients had objected to the tattoos. Three of the men had been in approved schools at the time their tattoos were done and one had been living in a children's home. Six of the women had been living in children's homes or in care.

Age at which patients presenting for removal of tattoo had had professional tattoo done

	Age (years)					
	14	15	16	17	18	20-26
Male	3	5	3	2	5	2
Female	2	4	7	4	2	3

We offered treatment with trichloroacetic acid to 57 patients, surgical excision to 18, and both to 17. Three patients refused treatment. Trichloroacetic acid gave a good or fair result in 22 patients and a poor result in one; 34 patients did not complete the treatment. Surgical excision gave an excellent result in 16 patients; two patients failed to keep their appointments. A combination of trichloroacetic acid and surgical excision was satisfactory in all 17 patients to whom it was offered.

### Comment

There is no simple treatment for tattoos, and non-attendance for treatment is high. A carbon dioxide laser gives good results in two thirds of patients but is expensive and time consuming and results in hypertrophic scarring in about one in 12 treatments.<sup>3</sup>

All the women regretted having had their tattoos done. This is similar to results of a survey of sailors with tattooed hands, in which nine in 10 expressed regret.<sup>4</sup>

In the South East Thames region 17 tattoo parlours are listed. Environmental health officers inspected 14 in 1989 and five were reported for tattooing people aged under 18. We think that all tattoo parlours should be registered and visited every six months and that they should display notices stating that tattooing people aged under 18 is illegal.

We would like tattooists to give clients written details of where and how big the tattoo will be. A cooling off period of a week would reduce the number of tattoos done on impulse.

We thank Mr Colin Franks (Brighton's chief environmental health officer) for information on tattoo parlours.

- 1 Tattoo marks in minors [Editorial.] *BMJ* 1969;i:4.
- 2 Piggott TA, Norris RW. The treatment of tattoos with trichloroacetic acid: experience with 670 patients. *Br J Plastic Surg* 1988;41:112-7.
- 3 Lanigan SW, Sheehan-Dare RA, Cotterill JA. The treatment of decorative tattoos with the carbon dioxide laser. *Br J Dermatol* 1989;120:819-25.
- 4 Scutt RWB. The demonstrated hazards of tattooing. *Journal Royal Naval Medical Service* 1970:56-115.

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