

PARALYTIC DROP FOOT AND GLUTEAL FIBROSIS AFTER INTRAMUSCULAR INJECTIONS

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Eight children with paralytic drop foot after intramuscular injections later developed gluteal fibrosis. Sciatic palsy, presenting as equinovarus or equinus deformity, was diagnosed on average 3.8 months after the intragluteal injections, but gluteal fibrosis was not diagnosed until 5.1 years after the injections. In three patients the equinovarus recurred after surgical correction due to persistent muscle imbalance and the effect of the external rotation contracture of the hip.

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Sciatic nerve injury manifesting as paralytic drop foot, and gluteal fibrosis manifesting as external rotation and abduction contracture of the hip, are well-recognised complications of intragluteal injections in infancy. Both complications in the same patient have not previously been reported. The coincidence may lead to the failure of treatment of the equinovarus deformity of the foot.

PATIENTS AND METHODS

We reviewed the records of eight children (seven boys and one girl) admitted to our institute between 1976 and 1991 for surgical treatment of equinovarus or equinus deformity of the foot who also had gluteal fibrosis. The right foot was affected in every case, and the gluteal fibrosis was bilateral in seven cases. The other child (case



Fig. 1

An external rotation deformity at the hip (right) tends to induce supination and adduction of the foot (case 1).

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8) had gluteal fibrosis on the left and a snapping hip due to contracture of the iliotibial band on the right. In two patients the diagnosis of gluteal fibrosis had been made before their admission for foot surgery, in four patients at the time of admission and in two some years after surgery. Details of the patients are given in Table I.

RESULTS

All the children had received intramuscular injections of antibiotics into the buttocks for bacterial infections in infancy. In seven of the patients the diagnosis of sciatic

chowska 1980). Gluteal fibrosis, however, has been thought to relate also to genetic and congenital factors, the intramuscular injection acting only as a trigger mechanism (Peiro, Fernandez and Gomar 1975; Shen 1975; Hang 1979).

Sciatic nerve injury usually produces the characteristic clinical signs of equinovarus or equinus deformity because the dorsiflexors and evertors of the foot are most often paralysed. Only rarely are the plantar flexors and supinators affected (Kędzierska-Polakowska et al 1979).

In patients with weak dorsiflexors, fixed equinus deformity usually develops despite conservative treat-

Table I. Details of eight patients with paralytic drop foot and gluteal fibrosis

Case	Sex	Delay in diagnosis after injections		Foot treatment		Hip treatment	
		Drop foot	Gluteal fibrosis (yr mth)	Age (yr mth)	Procedure	Age (yr mth)	Procedure
1	M	6 days	2 3	2 3 7 8	ETA* ETA and Japas osteotomy†	8 8	Elongation of gluteal muscles‡
2	M	2 months	1 1	1 1 4 9 5 5	ETA, midtarsal capsulotomy and wedge resection of calcaneus Osteotomy of metatarsals Tibialis posterior transfer		
3	M	8 months	8	1 8	ETA	11 0	Elongation of gluteal muscles‡
4	M	6 months	3 7	3 7	ETA		
5	M	Uncertain	2 6	12 6	ETA	12 6	Gluteus maximus elongation
6	F	6 months	8 11	4 7	ETA and posterior capsulotomy of ankle		
7	M	14 days	7 0	3 1 6 8	ETA and posterior capsulotomy of ankle Japas osteotomy	6 8	Gluteus maximus elongation
8	M	Uncertain	7 0				

* elongation of tendo Achillis

† Japas osteotomy, a V-osteotomy of the tarsus for cavus deformity

‡ elongation of gluteus maximus and partial release of gluteus medius

nerve injury and paralytic drop foot was made at an average of 3.8 months after the injections. In one patient (case 8) the diagnosis was not made until the patient was admitted for foot surgery.

Gluteal fibrosis was diagnosed much later, at an average of 5.1 years after the injections. The clinical features were external rotation and abduction contractures of the hip.

Four children required more than one surgical procedure on the foot due to recurrence of the equinus or equinovarus deformity.

DISCUSSION

Many authors have attributed sciatic nerve palsy in infancy to the mechanical or chemical effects of intragluteal injections (Combes et al 1960; Zwierzchowska and Zwierzchowski 1977; Kędzierska-Polakowska, Staszewska and Piesik 1979; Zwierzchowski and Zwierz-

chowska 1980). Gluteal fibrosis, however, has been thought to relate also to genetic and congenital factors, the intramuscular injection acting only as a trigger mechanism (Peiro, Fernandez and Gomar 1975; Shen 1975; Hang 1979).

Sciatic nerve injury usually produces the characteristic clinical signs of equinovarus or equinus deformity because the dorsiflexors and evertors of the foot are most often paralysed. Only rarely are the plantar flexors and supinators affected (Kędzierska-Polakowska et al 1979).

In patients with weak dorsiflexors, fixed equinus deformity usually develops despite conservative treatment with electrostimulation, exercises, plaster casts and orthoses, and lengthening of the tendo Achillis is usually necessary. In some cases, other surgical procedures are also required (Table I).

In our cases the sciatic palsy was usually diagnosed shortly after the nerve injury but the external rotation and abduction contracture of the hip developed gradually and was not usually recognised until several years later. This corresponds to the observations of Hang (1979) who found that gluteal fibrosis developed two to three years after the damaging injections.

After surgical correction of the deformities of the foot and despite the use of a brace when walking and splints at night, three of our patients (cases 1, 2 and 6) had recurrence of equinovarus deformity and required (or will require) further surgical correction. Recurrence may be explained by the persistent muscle imbalance between the paralysed dorsiflexors and evertors and the functioning plantar flexors and supinators, but in our

opinion the external rotation deformity at the hip also contributes. To compensate for the external rotation of the limb, children learn to adduct and supinate the foot while walking, an action made possible by the normal strength of the plantar flexors and supinators (Fig. 1). The one patient (case 7) in whom only forefoot equinus recurred, had normal invertor, evertor and plantar flexor muscles but the tibialis anterior was completely paralysed.

Conclusion. In children with injection-induced sciatic nerve palsy, the coincidence of gluteal fibrosis should be

taken into consideration early, although it may not become apparent until much later. The external rotation and abduction contracture at the hip should be corrected as early as possible, especially when the drop foot is associated with strong supinator muscles.

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