Summary

'Universal strength' BCG vaccine was given to 219 neonates and 2 months later 159 infants were Mantoux-tested with 5 Tu PPD-S and their BCG scars measured. The results showed a satisfactory conversion rate of over 90%. Though 30% of the lesions discharged, this only lasted for a few days and the vaccine was well tolerated and acceptable for use in neonates.

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B. HEYWORTH and BRENDA M. MULLINGER
Liverpool School of Tropical Medicine, and Clinical Division, Glaxo Research Ltd., Greenford, Middlesex.

Correspondence to Dr. B. Heyworth, Department of Tropical Paediatrics and Child Health, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA.

Primary hyperparathyroidism in a child

Use of jugular venous catheterization in diagnosis

Primary hyperparathyroidism is rare in childhood. Less than 50 cases have been reported in children under 16 years of age. The majority have been due to chief cell adenomata and most have presented with bone pain and fractures. About 20% have presented with renal involvement (Nolan *et al.*, 1960; Ahuja and Rao, 1973). With the development of immunoradiometric assays for parathyroid hormone (PTH), a new approach is possible to the diagnosis of parathyroid disease. In recent years this assay has been used to measure selective catheter samples from neck veins in adults to identify the site of the lesion before surgery, thus simplifying the surgical approach (Davies *et al.*, 1973; Eisenberg *et al.*, 1974). We report the use of this technique in the case of a 10-year-old boy with a parathyroid tumour.

Case report

The patient presented at the age of 10 with renal

colic. Shortly afterwards ureteric and pelvic stones, which proved to be calcium oxalate stones, were removed surgically. Subsequently he had some mild polyuria and polydipsia and vague malaise and lethargy but no other specific symptoms. A random serum Ca was 14 mg/100 ml (3.5 mmol/l), and he was admitted for investigation.

His fasting Ca ranged from 11.6 to 13.2 mg/ml (2.9-3.3 mmol/l). There was no radiological evidence of metabolic bone disease. After 14 hours' fluid deprivation maximal urine osmolality was 468 mOsm/kg. PTH was measured by immunoradiometric assay, using the method of Addison *et al.* (1971). A fasting PTH was 1.0 ng/ml (normal 0.1-0.9 ng/ml).

In view of this borderline result and the suggestive clinical situation, jugular venous catheterization was performed. Under general anaesthesia a catheter was introduced into the femoral vein and advanced through the inferior vena cava and right atrium to the superior vena cava. Selective samples of blood were withdrawn in the superior vena cava, the right brachiocephalic and left brachiocephalic veins, the major thyroidal venous plexus on the right side and high and low left internal jugular sites. A venogram of the neck did not show any plexus suggestive of a tumour.

The samples thus obtained were immediately separated and frozen for later assay for PTH. The PTH levels at the various sample sites (Fig.) show a markedly raised PTH level in relationship to the common inferior thyroidal vein, thus suggesting the presence of a PTH-producing tumour.

At exploration of the neck a 1 cm × 0.5 cm. adenoma was found occupying the left inferior parathyroid, and was removed. The other three parathyroids were visualized and were of normal size. Histological examination of the resected tumour showed a chief cell adenoma within a normal parathyroid gland.

Apart from some minor neuromuscular excitability, the postoperative period was unremarkable. A repeat serum PTH 2 weeks postoperatively was 0.35 ng/ml and serum Ca 10.1 mg/100 ml (2.5 mmol/l). There was no residual renal damage.

Discussion

This case shows the importance of serum PTH measurement in the diagnosis of parathyroid adenomata. In this age group there are relatively few causes of raised serum Ca. While hyperparathyroidism was clinically suspected the problems associated with parathyroid exploration necessitated more sophisticated diagnostic techniques.

The serum PTH was only marginally raised. In

Fig. Parathyroid hormone levels (ng/ml) at different sites in the jugular venous system. IVC=inferior vena cava.

most cases of parathyroid adenoma the serum PTH is clearly raised though O'Riordan *et al.* (1972) have reported an overlap with the normal range in some cases.

The use of selective venous catheterization has become a well established technique in adults for the localization of parathyroid tumours (Davies *et al.*, 1973; Eisenburg *et al.*, 1974). However, best results are obtained if the thyroid veins are catheterized (Bilezikian *et al.*, 1973). The precision of the localization is reduced considerably if only the great veins are catheterized. However, in view of the lack of experience of this technique in children we did not feel justified in attempting difficult catheterization of small veins.

The catheter study confirmed the diagnosis of a parathyroid tumour beyond doubt and suggested its inferior position. However, lateralization was difficult from the study as veins from both sides appeared to enter the jugular vein at the site of maximal PTH, though the tumour was large and easily found at surgery.

The technique of selective jugular venous catheterization for estimation of PTH levels is an established technique in adults that seems to be applicable and

useful in the diagnosis of parathyroid tumours in childhood.

Summary

A 10-year-old boy with a parathyroid adenoma is reported. Parathyroid hormone estimations of samples obtained by selective jugular venous catheterization were useful in diagnosis and for localizing the tumour before operation.

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P. D. GLUCKMAN, R. S. FERGUSON, D. OSBORNE, and M. EVANS
Departments of Paediatrics and Endocrinology, University of Auckland, and Departments of Paediatric Surgery and Radiology, Auckland Hospital, New Zealand.

Correspondence to Dr. P. D. Gluckman, Division of Pediatric Endocrinology, University of California Medical Center, San Francisco, California 94143, USA.

Duodenal intubation with secretin stimulus for diagnosis of giardiasis

The optimal pH environment for *Giardia lamblia* trophozoites is between 6 and 7 (Haiba, 1954). The trophozoites are intolerant of acid, and they are rapidly immobilized and destroyed when the pH in the duodenal contents is low (Petersen, 1972).