

the provision of improved facilities for extended postoperative recovery.

### *Caudal block in children*

E.N. Armitage (Brighton)

Very few children presenting for surgery are in pain preoperatively. Many of the younger ones are unaware that there is anything the matter with them; they therefore naturally regard postoperative pain as unnecessary and unjust.

Caudal block has been found valuable for pain prevention in children since it is free from the disadvantages which limit its use in adults. In children, a caudal, performed under light general anaesthesia, is successful in over 98% of cases, is suitable for surgery from the umbilicus downwards, and takes less than 1 min to perform.

The sacral cornua are the important landmarks and, with the child's hips flexed to 90°, the cornua are found to lie in line with the long axis of the femur. Once the needle has penetrated the sacro-coccygeal ligament, it is not re-angled or advanced further into the sacral extradural space lest a blood vessel is damaged.

There are two causes of failure with paediatric caudals. The first is anatomical, and with experience and careful attention to the landmarks, this is rare. The second cause may be termed 'functional', that

is, failure to obtain a satisfactory block even when the needle is correctly placed. Failure is then almost always due to low dosage—doses in common use are too low to give successful blocks in every child.

The following dosage scheme, using 0.25% plain bupivacaine, is effective and avoids the need for calculating the number of segments to be blocked: block of sacral nerves (e.g. for circumcision) 0.5 mg/kg, block to lower thoracic nerves (e.g. for inguinal herniotomy) 1 ml/kg, and block to mid thoracic nerves (e.g. for orchidopexy or umbilical herniorrhaphy) 1.25 ml/kg. When this regime results in a volume of local anaesthetic greater than 20 ml, the bupivacaine concentration is reduced to 0.19%. This avoids the unpleasant sensation of lower limb weakness and heaviness which may otherwise result. It is well known that children are very tolerant of local analgesics in the extradural space. There have been no signs or symptoms of local anaesthetic toxicity in over 1100 cases, and samples taken for plasma bupivacaine analysis have always shown levels below 1.2 µg/ml.

The technique is applicable over a wide range of paediatric surgery. Pain prevention extends well into the postoperative period. Quick recovery of consciousness, due to light levels of general anaesthesia, is an additional advantage.

Grossly abnormal sacral anatomy, bleeding tendencies and local sepsis are contra-indications to the technique.

### **Free Papers. Thursday 30 November 1978. 1615 hrs**

*Chairman:* Dr S.A. Mason (King's College Hospital, London) *Co-Chairman:* Prof. Dr H.J. Eberlein (Berlin)

#### *Spinal subarachnoid anaesthesia with bupivacaine*

M.D. Farrar, H. Nolte & J. Meyer (Minden).

This paper presents an experience of spinal analgesia using 0.5% bupivacaine plain, and with adrenaline 1:200 000.

In the last 10 years, over 7000 spinal subarachnoid blocks have been given using bupivacaine. Isobaric and hyperbaric (0.5% bupivacaine with 9.5% dextrose) have both been employed successfully.

The author's experimental work supports the safety of using bupivacaine in the cerebrospinal fluid.

#### *Controlled hypotension using labetalol: its use in resistant cases*

D.H.P. Cope (The Middlesex Hospital, London)

The reduction of blood loss by controlled hypotension during major surgery aids anatomical exposure, minimises tissue trauma and infection,

improves wound healing, and reduces the need for blood transfusion. Micro-surgery of the middle-ear is also greatly facilitated by this technique.

Controlled hypotension is commonly produced by the use of halothane and tubocurarine and, in those cases where adequate hypotension is not attained, ganglion blockers, beta blockers or sodium nitroprusside are employed. None of these additional agents are entirely satisfactory.

Patients who present special problems in attaining hypotension commonly fall into three groups, the younger patients who have high sympathetic tone, patients whose anxious state has resulted in a marked tachycardia and patients for whom halothane is contraindicated. This paper describes the use of labetalol in fifty such cases.

Labetalol, a combined alpha and beta adreno-receptor blocker was introduced in the treatment of hypertension in 1975. It seemed that it could be ideal for use during surgery. The alpha adrenoreceptors of the capacitance vessels would be blocked with resultant vasodilatation, and reflex tachycardia and