Femoral nerve block for analgesia in fractures of the femoral neck

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SUMMARY

The purpose of this study was to investigate the efficacy of femoral nerve blocks in patients with fractures of the neck of the femur. Thirty-six patients with femoral neck fractures attending the accident department over a three month period received femoral blocks from one of the two authors. The effect of the block was assessed both subjectively and objectively. Thirty patients reported a worthwhile reduction in pain following the procedure and this was supported by objective blockade in 29. In all six patients who reported no benefit, the block failed objectively. There were no complications of the procedure.

INTRODUCTION

Fracture of the femoral neck is most commonly an affliction of the elderly. These elderly people are often in severe pain exacerbated by any movement, and the application of satisfactory splintage or traction is usually impracticable in the A&E department. Clinicians are frequently reluctant to administer adequate parenteral analgesia to these patients, for fear of worsening intercurrent disease or of precipitating unwanted side-effects in patients who are often already frail. Local anaesthetic blockade of the femoral nerve at the level of the inguinal ligament is a well-described and efficient technique in achieving analgesia in fractures of the femoral shaft (McGlone *et al.*, 1987; Tondare & Nadkarni, 1982; Grossbard & Love, 1979), and has been used together with light sedation for femoral neck surgery (Howard *et al.*, 1983).

The purpose of this study was to investigate the efficacy of such nerve blocks in fractures of the femoral neck.

METHOD

Femoral nerve blocks were performed using the following technique (Khoo & Brown 1983): 10 ml 0.5% bupivacaine was injected fanwise around the femoral nerve, deep to the fascia iliaca, lateral and deep to the femoral artery, 1 cm distal to the inguinal ligament, taking care to avoid intra-arterial injection. The block was assessed in two ways, objectively by testing pin-prick and light touch sensation in the femoral nerve territory and subjectively by asking the patient whether their pain was worse, unchanged, reduced or absent. The fractures were classified as intracapsular or extracapsular. Injection of local anaesthetic into the joint (i.e. haematoma block) was excluded by repeated aspiration during the procedure.

PATIENTS

Blocks were performed on patients in the A&E department with radiologically proven fractures, over a three month period. Those patients with whom communication was difficult were excluded from the study. These included patients with dementia, or severe communication difficulties e.g. strokes and those patients with a poor understanding of English. Also excluded were those patients with groin infections or gross obesity.

RESULTS

Thirty-six blocks were performed on 36 patients, 29 female and 7 male. The age range was 31 to 95 years with a mean age of 78 (s.d. 13). Two of the men were young, 31 and 44, one of whom had multiple injuries. Pain was completely abolished in 4 patients, reduced in 26 and remained the same in 6. No one reported worsening of their pain (Table 1).

Objective blockade was achieved in all but 7 patients, the 6 who reported no benefit and one who reported reduced pain. The 4 patients in whom the pain was abolished had extracapsular fractures and those with reduced pain were evenly distributed between the two groups (Table 2). Intracapsular injection was avoided in all cases.

The case notes of all the patients were examined after discharge from the ward, or death, to determine whether there had been any complications related to the block; there were none.

DISCUSSION

The innervation of the periosteum of the femoral neck is unclear but Hilton's law states that the sensory supply to a joint is derived from the nerves to the muscles acting across

Table 1 Results

Patient no.	Fracture	Age	Assessment	
			Objective	Subjective
1	extracapsular	75	reduced	reduced
2	intracapsular	80	reduced	reduced
3	intracapsular	76	reduced	reduced
4	extracapsular	81	no change	reduced
5	extracapsular	31	reduced	absent
6	extracapsular	78	reduced	reduced
7	intracapsular	73	no change	no change
8	intracapsular	84	reduced	reduced
9	intracapsular	77	reduced	reduced
10	intracapsular	85	no change	no change
11	extracapsular	86	reduced	reduced
12	extracapsular	78	reduced	absent
13	extracapsular	87	reduced	reduced
14	intracapsular	86	no change	no change
15	extracapsular	91	reduced	reduced
16	extracapsular	87	reduced	reduced
17	intracapsular	74	reduced	reduced
18	intracapsular	80	no change	no change
19	intracapsular	92	reduced	reduced
20	extracapsular	88	reduced	reduced
21	intracapsular	69	reduced	reduced
22	intracapsular	79	reduced	reduced
23	extracapsular	95	reduced	reduced
24	extracapsular	79	reduced	reduced
25	intracapsular	95	reduced	reduced
26	extracapsular	83	reduced	reduced
27	intracapsular	68	reduced	reduced
28	intracapsular	81	reduced	reduced
29	intracapsular	72	reduced	reduced
30	extracapsular	44	reduced	absent
31	intracapsular	80	no change	no change
32	intracapsular	84	reduced	reduced
33	intracapsular	73	reduced	reduced
34	extracapsular	63	reduced	reduced
35	intracapsular	77	no change	no change
36	extracapsular	62	reduced	absent
Total extracapsular: 16			Total intracapsular: 20	

Table 2 Subjective pain level

	No change	Reduced	Absent
Intracapsular	6	14	0
Extracapsular	0	12	4

the joint. This is probably more relevant when considering proprioceptive than periosteal nociceptive innervation, but it may be assumed that pain from femoral neck fractures is conducted in the femoral, the obturator and the sciatic nerves, to a greater or lesser extent. It seems logical that pain from a femoral neck fracture would be modified but not abolished, by femoral nerve blockade, and this is reflected in the results of the study. The majority of patients who received blocks felt that worthwhile pain relief was achieved, and the absence of complications encountered implies that the technique is safe. None of the patients who received effective blocks required further analgesia in the A&E department, whereas all of those with failed blocks needed parenteral analgesia.

It is interesting to note that the four patients in whom the pain was abolished had extracapsular fractures, whereas none of the patients with intracapsular fractures had complete pain relief. This may be because the more distal the fracture, the more likely it is to have a dominant femoral nerve supply.

In conclusion, we feel that femoral nerve blockade is a simple, safe and effective method of achieving pain relief in patients with fractures of the femoral neck, and would recommend more widespread use of the technique.

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