

SHORT COMMUNICATION

Incidence of penetration of a blood vessel during inferior alveolar nerve block

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SUMMARY. Aspiration of the syringe after the needle had been placed in position for an inferior alveolar nerve block (but before the anaesthetic solution was injected) in 250 patients showed that the tip of the needle was in a blood vessel in 49 (20%). Aspiration of blood was significantly more common in patients aged 9–19 years than in all others ($P = 0.04$).

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INTRODUCTION

It is desirable to aspirate before injection when giving an alveolar nerve block because the anaesthetic may fail if the injection is given into a blood vessel, and the anaesthetic solution may have undesirable systemic effects.¹

PATIENTS AND METHODS

We studied inferior alveolar nerve blocks in 250 patients at the clinic of oral surgery and anaesthesiology at the Dental School, University of Athens. A Luer syringe with a 22G needle 32 mm long was used. The needle was directed from the premolar area towards the mandibular foramen. After the needle had made contact with the bone, it was withdrawn 2–3 mm and the piston of the syringe was drawn back so that the entry of blood into the syringe could be seen. If blood was aspirated the needle was withdrawn and the injection repeated.

RESULTS

Of the 250 nerve blocks there were 49 from which blood was withdrawn (20%). Table 1 shows the data. Between the ages of 9 and 19 the incidence of intravascular penetration was significantly greater than at other ages (10/28 compared with 39/222, $P = 0.04$).

DISCUSSION

Intravascular injection of local anaesthetic during inferior alveolar nerve block is common. According to some authors aspiration is not necessary because intravascular injection of local anaesthetic is rare (frequency 0.5%).² These authors maintained that even if that does happen, the amount of solution contained in one anaesthetic cartridge (2%, 1.8 ml) is not enough to be toxic. Most authors do not agree with this, however, and consider aspiration before an inferior alveolar nerve block to be necessary.

Table 1 Incidence of aspiration of blood before inferior alveolar nerve block according to age and sex

	Age group (years)							Total
	9–19	20–30	31–40	41–50	51–60	61–70	71–80	
Men	12	19	22	19	24	16	7	119
Women	16	18	27	26	26	18	0	131
Blood aspirated								
Total (%)	10 (36)	8 (22)	7 (14)	8 (18)	9 (18)	6 (18)	1 (14)	49 (20)
Men	4	4	2	3	4	3	1	21
Women	6	4	5	5	5	3	0	28

Chi-square test of independence between age and blood aspiration (the age group being divided in two classes: 9–19 and all the rest): 4.108, df 1, $P = 0.04$.

The haemodynamic effects of a local anaesthetic with 1:100 000 vasoconstrictor have been studied in healthy people.³ This concentration does not cause substantial changes to the cardiovascular system when intravascular injection of the local anaesthetic is avoided. However, greater concentrations (>1:50 000), or even the rapid intravascular injection of the cartridge of anaesthetic solution, may have dangerous haemodynamic effects in patients with cardiovascular disease.⁴

The high incidence of intravascular injection during inferior alveolar nerve block that we found proves that aspiration is necessary because the failure of anaesthesia is accompanied by an increased likelihood of serious systemic complications, which may even endanger the life of the patient.

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