PRESSURES GENERATED BY LOSS OF RESISTANCE TO AIR

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INTRODUCTION

Loss of resistance (LOR) to air has been used for years to locate the epidural space. Anesthesiologists differ in the volume of air used during LOR and are generally unaware of the pressures applied to the needle tip with these volumes. However, applying excessive pressure may generate a false pocket/space. This study investigated pressures generated by LOR with different volumes of air.

METHODS

A 10 mL B Braun Perifix LOR syringe was connected to a Tuohy needle attached to a pressure transducer. The transducer was connected to an arterial line pressure monitor. Pressure readings were generated by creating sustained pressure on the plunger at increasing compression ratios starting at a volume of 10 mL (e.g. 10 to 9 mL; 10 to 8 mL etc.). The experiment was then repeated with initial air volumes of 9, 8, 7, 6, 5, 4, 3 and 2 mL. Each set was tested 5 times. Boyle's Law (Pressure x Volume = constant) was used to calculate the expected pressure values from different compressions.

RESULTS

DISCUSSION

This study demonstrates the pressure generated by different compressions on a LOR syringe can be predicted by Boyle's Law. It was shown that applying approximately 300 mmHg of pressure during LOR successfully identified the epidural space without false LOR.¹ Based on our results, the LOR syringe should not be compressed more than 35% (e.g. from approximately 6 to 4mL) to maintain a pressure below 300 mmHg.

REFERENCES

1. *Anaesthesia* 57:768-772.