INADVERTENT INJECTION OF ADRENALIN INTO SUBARACHNOID SPACE – A CASE REPORT

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SUMMARY

A local anaesthetic agent with adrenalin meant for infiltration block was inadvertently given into spinal canal without any serious sequelae. The consequences of adrenalin in the subarachnoid space are discussed. Measures to prevent such accidents are suggested.

INTRODUCTION

Since the introduction of spinal anaesthesia in clinical surgery by August Bier in 1898, numerous complications have been recognised. Spinal anaesthesia has been viewed sceptically especially after the report of grave spinal cord paralysis [1] and the Woolley and Roe case in 1954. Later reports proved that spinal anaesthesia is safe and postoperative complications are minimal when it is correctly administered and supervised, [2] and the hazards are now no greater than with any other technique used in anaesthesia. [3]

However, mistakes do and will happen. It is therefore everyone's duty to reduce the possibility of errors as far as possible.

We report here a case of inadvertent injection of vasoconstrictor-containing local anaesthetic agent into the subarachnoid space during spinal anaesthesia.

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CASE REPORT

A 75 year old Indian male patient was planned for transvesical prostatectomy under spinal anaesthesia.

After preparation of the skin and draping, local infiltration of the skin and subcutaneous tissue was done with 1 ml. of Prilocaine containing 2% Adrenalin. Lumbar puncture was performed in the left lateral position at the level of $L_{3,4}$ at a depth of approximately 4 cm. The remainder of the local anaesthetic solution after skin infiltration (2 ml.) was inadvertently injected into the subarachnoid space. The mistake was realised on seeing the unused syringe containing the local anaesthetic (2 ml. of heavy Xylocaine 5%). The patient was positioned supine with head elevated and observed.

The operation was postponed. The patient had analgesia up to the level of T_{10}. This lasted for three hours. His vital signs were stable. Complete neurological examination was done subsequently at 9 and 24 hours after the injection. Signs and symptoms of anterior spinal artery syndrome and cauda equina syndrome were particularly looked for and they were not present. Subsequently the patient was operated on under general anaesthesia.

DISCUSSION

This patient received a total dose of 40 mg. of Prilocaine with 10 μg. of adrenalin in 1 : 20,000

dilution. Moore and Bridenbaugh [2] have reported that injection of solutions containing epinephrine 0.2 mg. in 0.2 ml. (1 : 1000) added to the local anaesthetic solution do not result in systemic toxic reaction or in damage to the normal spinal cord. But prolonged spinal block followed by muscular weakness of the lower limbs and occasional impotence have been observed by them. Experiments in monkeys by Wu and associates [4] have shown that neurological complication occurs only when subarachnoid space is perfused with high concentration of vasoconstrictor drugs for prolonged periods.

The technique of using vasoconstrictor drug to prolong spinal block is a controversial one. Vasoconstriction of the arteries supplying the spinal cord can lead to ischaemia and hypoxia of the cord with resultant neurological damage. Also those who used vasoconstrictor drugs in spinal space could not agree among the various vasoconstrictors which is the most effective potentiator of spinal block. [5,6]

In view of the known complications, adrenalin-containing local anaesthetic agents are better avoided in spinal blocks in order to prolong the duration of the block. For infiltration of skin and superficial tissues local anaesthetic with adrenalin is not necessary and instead plain solution of local anaesthetic can be used.

The epidural / spinal set in our hospital contained only 2 glass syringes - one 10 ml. and one 5 ml. syringe. The 5 ml. syringe was used for infiltration of the skin and the 10 ml. syringe for epidural or spinal injection. Loading the spinal anaesthetic solution beforehand leads to confusion and mix up of drugs as in this case. We have now included an additional 2 ml. syringe and each syringe is used only for a specific purpose. The 2 ml. syringe for spinal anaesthetic solution, the 5 ml. syringe for infiltration and the 10 ml. syringe for identification of epidural space and subsequent injection of drugs. The spinal anaesthetic solution is loaded on to the syringe from the ampoule only after CSF tap is obtained. This has prevented mixing up of drugs.

In conclusion we would like to suggest the following precautions:

1. Avoid all adrenalin-containing local anaesthetics in spinal block.
2. Spinal anaesthetic solution to be loaded only after a successful lumbar puncture.
3. Specific syringes for specific purposes.
4. Discard the remaining anaesthetic solution in the syringe after skin infiltration.

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