Effect of Epidural versus General Anaesthesia on Peroperative Blood Loss during Retropubic Prostatectomy

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(Received October 26, 1981)

Peroperative blood loss, arterial blood pressure and central venous pressure were studied in patients subjected to retropubic prostatectomy. The patients were randomly allocated to two groups, continuous lumbar epidural analgesia for up to 24 hours and a thiopentone-oxygen-nitrous oxide-alcuronium-pethidine sequence with intermittent positive pressure ventilation. The mean peroperative blood loss during operations under epidural analgesia was significantly less than that under general anaesthesia (370 ± 34 ml vs. 590 ± 35 ml, mean ± SE). Only one patient out of 17 cases of epidural analgesia needed a peroperative blood transfusion, in contrast to 5 out of 21 general anaesthesias. Both the arterial systolic and diastolic pressures, and central venous pressure were significantly lower under epidural analgesia than general anaesthesia. It was concluded that decreased arterial and venous pressure were responsible for the reduced blood loss under epidural analgesia.

Introduction

The peroperative blood loss was found to have decreased when spinal or epidural analgesia were used for open prostatectomy [4, 14, 18]. Jensen and Stokke [6], in their retrospective study on the effect of epidural analgesia on the intraoperative blood loss during major abdominal surgery, found no correlation between the method of anaesthesia, general or general plus epidural, the behaviour of arterial blood pressure and the quantity of peroperative haemorrhage. These controversial reports and the importance of blood loss with an increase in both risk and cost prompted the present investigation.

Material and methods

The study included 38 patients subjected to retropubic prostatectomy due to hypertrophy of the prostatic gland. Informed consent was obtained from each subject. Patients were randomly assigned to receive continuous lumbar epidural analgesia or general anaesthesia. Table 1 represents some data of the patients.

The operation was performed by the same surgeon. The operative technique was Millin's retropubic prostatectomy [17], except in one case in the general group where a transvesical approach was chosen for technical reasons.
A peripheral vein was cannulated for infusion of 5% glucose in 0.3% NaCl at a rate of 10 ml/kg b.w./hour. About 40 per cent of the patients in both groups received 500 to 1000 ml of polygeline (Haemaccel®) to correct hypotension or hypovolaemia or both. Blood transfusion was given if the blood loss exceeded about 10 per cent of the calculated blood volume of the patient. A central venous catheter was inserted percutaneously via the basilic vein and central venous pressure was measured with a water manometer. The left radial artery was cannulated for measurement of blood gases. The core temperature was recorded with the probe in the auditory canal and/or nasopharynx (Ellab, Copenhagen). Arterial blood pressure was measured by the method of Riva-Rocci. All the measurements were made before induction of anaesthesia, at the start and end of operation and peroperatively every 20 minutes, except for blood pressure which was measured every five minutes. Measurement of blood loss was carried out by weighing the swabs immediately after use, and by measuring the contents of the suction bottles. The blood-stained drapes were inspected and the amount of blood was estimated visually. The patients were premedicated orally with diazepam 45 minutes before operation. General anaesthesia was induced with thiopentone (Intraval®) in a dose sufficient to abolish the eyelash reflex (200-350 mg). Suxamethonium (Myo- laxin®) 50 mg, was given to facilitate the orotracheal intubation with a cuffed tube. Anaesthesia was maintained with 30 per cent oxygen and 70 per cent nitrous oxide in a semiclosed absorber system. Ventilation was controlled with a Bennet anaesthesia ventilator, the respiratory frequency being 10/min and the tidal volume 10 ml/kg body weight. Arterial blood gases were analyzed every 20 minutes and the ventilation was adjusted aiming at normoventilation. Relaxation was provided by alcuronium (Alloferin®) (total dose 17.5-22.5 mg) and pethidine was given to supplement the anaesthesia (total dose 70-130 mg). At the end of anaesthesia muscle relaxation was antagonised with 1 mg atropine and 2 mg neostigmine intravenously.

For epidural analgesia, an epidural catheter was inserted at the 4th or 5th lumbar vertebral interspace. Epidural analgesia was achieved with 2% butanaliceaine.