ABSTRACT

Plasma concentrations of mepivacaine were determined after retrobulbar anesthesia. The measured maximal blood levels that can produce systemic side effects range from 1.23 to 4.88 μg/ml. We therefore recommend preoperative and intraoperative monitoring of arterial blood pressure and ECG.

Systemic side effects from retrobulbar anesthesia are often reported. Plasma levels of the local anesthetic agent mepivacaine were therefore determined after the injection at different intervals.

PATIENTS AND METHODS

Mepivacaine plasma levels were determined in ten patients with planned extracapsular cataract extraction with posterior chamber intraocular lens implantation after retrobulbar anesthesia injection. The average patient age was 75.6 ± 8.5 years. A dose of 200 mg mepivacaine was administered to all patients using the following method: For the facial block, 10 ml of scandicaine 1% solution (mepivacaine 1%, naphazolin 10 exp -5, 150 units/ml hyaluronidase), and for the retrobulbar block 5 ml of scandicaine 2% solution (mepivacaine 2%, naphazolin 10 exp -5, 150 units/ml hyaluronidase) were used without any premedication. The mean dose of mepivacaine was 3.11 ± 0.71 mg/kg bodyweight. Oculopression of 40 mm Hg was applied for ten minutes. Nine blood samples were obtained by cubital venipuncture using heparinized tubes (10 ml) at -15, 0, 5, 10, 30, 60, 120, 180, and 240 minute intervals after the administration of the local anesthesia. The blood samples were then centrifuged with 3000 rpm, and the plasma residuum was deep frozen until time of use. Plasma concentrations of mepivacaine were determined via gas chromatography.

RESULTS

The mean maximal blood levels of mepivacaine were 3.28 ± 1.22 μg/ml, which were reached within 15.2 ± 16.7 minutes after injection. In two patients the maximal mepivacaine levels were above 4.5 μg/ml. The plasma half life averaged 105 ± 40 minutes (Figures 1 & 2).

DISCUSSION

The plasma kinetics demonstrate the typical course of an infiltration anesthesia with rapid initial absorb-
tion. No toxic blood levels were found in any of these patients. However, the measured levels of mepivacaine were in a range that can produce systemic side effects such as bradycardia, a decrease of arterial blood pressure, and central nervous complications.

We therefore recommend preoperative and intraoperative monitoring of arterial blood pressure and ECG when retrobulbar anesthesia is used.

REFERENCES