SUCCESS OF THE EPIDURAL TECHNIQUE IN CHILDREN COULD BE PREDICTED USING PUPILLOMETRY (ALGISCAN®)

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Background

Regional and central blocks in children have been traditionally performed under sedation or general aesthesia.. Monitors of analgesia, as the pupillometry Algiscan, may help predict intraoperative levels of pain prior surgical incision.

Description

Two pediatric patients, aged 4 and 10 years respectively, were scheduled for femoral osteotomy. They had previous history of subtrochanteric femoral shortening with no other important diseases. General anesthesia was induced with sevoflurane 6% and once iv catheter was inserted, propofol 2 mg/kg and fentanyl 1 mcg/kg were administered. HR, SpO₂, arterial pressure and BIS were monitored. Anesthesia was maintained with Sevoflurane and remifentanyl 0.05 mcg/kg/min (BIS 50-60). The epidural catheter was placed in L4-L5 interspace using a loss of resistance technique. L-bupivacaine 0.025% at a dose of 0.05 ml/kg was administered. An electrode in the same dermatome as the expected incision site was placed prior surgical field setting and was connected to the Algiscan. Pupillary dilation (using Pupillary Pain Index "PPI") produced by nociceptive stimulation caused by an increasing tetanic stimulation (from 10 to 60 mA) was measured every 15 minutes after epidural bolus. Once pupilar diameter reaches 13 % (infranociceptive index) the tetanic stimulations stop and show a PPI score (from 1 to 10), related to the quality of analgesia.

In our recordings, none of the measures reached any value PPI score > 4, which correlates with good intraoperative analgesia. Hemodynamic parameters did not change when incision was performed, which also showed good correlation with PPI previous scores. VAS scale for pain was also 0-2 respectively in the PACU. The patients remained hemodynamically stable the during surgery.

Discussion

Pupillary dilation as a consequence of tetanic stimulation could be used to assess the success of a regional technique in children. In our cases, PPI scores prior and during surgery had good correlation with hemodynamic parameters and level of pain. This may also be a good option to adjust analgesia before any noxious stimuli appear in the patient as per traditional hemodynamic parameters.

Conclusion

Pupillometry may help predict surgical pain prior incision in children under general anesthesia. Further studies are still necessary to confirm this hypothesis.

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