Caudal block for early treatment of iatrogenic inferior limb cyanosis

in a newborn

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Abstract

The caudal block associated with heparinic therapy seems to be an effective early treatment to improve iatrogenic cyanosis of lower extremities in newborns. The use of local anesthetic with low toxicity such as ropivacaine may an important alternative versus other more aggressive treatments.

Keywords: caudal block, arterial spasm, ropivacaine
Introduction

The femoral artery cannulation is a common procedure in pediatric and neonatal intensive care for continuous blood pressure monitoring and for seriate arterial blood gas analysis. Sometimes vascular reactivity is so important that only one puncture may cause an intense spasm of blood vessels (1). Prophylactic therapy with heparin may prevent the worsening of symptoms avoiding thrombosis, but it doesn’t useful to solve the spasm of vessels. Administration of local anesthetics in epidural space has been proved useful to resolve ischemia and thrombosis in neonatal and pediatric patients by its sympatolitic effect (2-3).
Case presentation

We describe a case of a newborn arrived in our intensive care unit, after few hour from caesarian section (40° wk), for respiratory distress, severe hypoglycemia and macrosomia (4800 g). Chest x-ray showed cardiomegalia and a cardiac echo confirmed a severe hypertrophic cardiomiopathy.

We decided to cannulate the right femoral artery for continuos blood pressure monitoring and for seriate arterial blood gas analysis.

We covered the limb by a sterile cloth, we pricked the leg in the area where the presence of the femoral artery was estimated and we attempted uselessly to introduce the guidewire.

After some minutes we stopped the procedure but when the cloth was removed, the limb was intensely cyanotic (Fig. 1).

After 15 minutes the symptoms did not improve so we decided to perform a caudal block with a loading dose of Ropivacaine 0.2% 4 ml and 30 minutes later we began a continuos infusion of Ropivacaine 0.05% (Ropivacaine 0.2% 10 ml + Normal Saline 30 ml) at 1 ml/hour rate for 36 hours.

The improvement of the cyanosis was progressive since few minutes.

The color of the limb was almost back to normal and it was warmer; only the distal phalanxes of the foot remained cyanotic.

After 7 hours we repeated the photo (Fig. 2).

24 hours later vascular echo doppler showed popliteal and tibial flow reduction for which we initiated heparinic therapy.

72 hours later vascular echo doppler showed a normal blood flow.
Fig.1 The cyanotic leg
Fig. 2  The improvement of the cyanosis was progressive since few minutes
Conclusions

In this case we describe iatrogenic intense limb cyanosis probably caused by the association between arterial spasm and thrombosis, who required immediate medical treatment.

The caudal block associated with heparinic therapy has been an effective early treatment to improve iatrogenic cyanosis of lower extremities in newborns.

A caudal block with the use of local anesthetic may be an alternative, effective and safety treatment to resolve arterial spasm in lower extremities.
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