

Ischemia of the upper extremity in a premature newborn baby after venous puncture

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Abstract

The case of a extremely premature newborn, with very low weight (705-gramas), with a gestational age determined by Capurro of 29 weeks is related. After venous puncture in the axilar region, the patient presented signs of ischemia distal to the puncture. The presence of cianosis, cooling, muscular weakness and the absence of pulses distal to the puncture were detected. Doppler ultra-sound failed to demonstrate the presence of flow distal to the puncture. A cephalic ultra-sound was made demonstrating intracranial hemorrhage. Expectative treatment was chosen and on the third day after puncture a return of blood flow was detected using doppler ultra-sound.

Key Words: Ischemia, artery axilar, trauma

Introduction

Advances in the pediatric care provided in intensive therapy units have improved the survival of children with life-threatening diseases. However this may make complications that were rare in the past, for instance, arterial thrombotic events, more common^(1,2).

Endovascular catheters are the main cause of thrombotic events in children⁽²⁾. Other causes including trauma, sepsis, infection, congenital and acquired thrombophilias and dehydration may also be cited⁽³⁾. However, the indications for therapeutic interventions, such as the use of fibrinolytic therapy and prophylactic anticoagulation, in different clinical situations are still not well defined⁽⁴⁾.

There are few publications about peripheral arterial thrombosis, in particular in preterm newborn babies. The aim of the current study is to warn about the possibility of arterial thrombosis during blood vessel puncture.

Case report

The case of an extremely premature female newborn baby is reported. The baby was severely underweight (705 grams) with a gestational age, using the Capurro method, of 29 weeks and an Apgar score of 8-10. Born by C-section due to maternal pre-eclampsia, the baby soon after birth presented with respiratory insufficiency due to the prematurity and required clinical support measures including mechanical ventilation.

On the 10th day of life, after a venous puncture in the right axillary region, cyanosis of the limb was observed, the limb remained immobile and there was no pulse distal to the puncture. An evaluation using Doppler ultrasound showed that there was no distal arterial blood flow to the limb. A brain ultrasound was performed which demonstrated a Grade I intracranial hemorrhage (focal brain injury). Expectant therapy was chosen and on the second day the arm demonstrated

signs of clinical improvement with the blood flow returning on the third day.

Conclusion

Publications about peripheral arterial thrombosis in preterm newborn babies are rare. The most common cause is the use of catheters 4. The current study describes the case of the absence of the distal pulse in an upper limb after venous puncture in the region of the axillary artery. Ischemia continued for two days with return of the arterial blood flow on the third day.

The clinical manifestations were cyanosis, with a drop in temperature and the absence of mobility and of a pulse distal to the puncture site. This report warns about the possibility of thrombosis after venous puncture: the signs were observed around three hours after this procedure. The two main diagnostic hypotheses were the presence of an arterial spasm and thrombosis.

In this case the conduct was expectant due to the intracranial bleeding detected by brain ultrasound and the possibility of either arterial spasms or thrombosis.

The utilization of fibrinolytic therapy is contraindicated because of the venous puncture and due to the high risk of intracranial bleeding. The fragility of blood vessels in preterm infants highlights the necessity of a critical assessment of the risks and benefits associated with possible conducts. A brain ultrasound is important to indentify bleeding before any fibrinolytic or heparin therapy is initiated; in our opinion a brain ultrasound should be routine practice in these cases.

The size of peripheral arteries in low birth weight premature newborn babies may make any surgical approach unviable and thus, in most cases, clinical measures are the only alternative. Despite of the care taken during venous puncture, the traumatism of vessels in these patients may lead to thrombosis or sectioning of the vessel, the formation of pseudoaneurysms or arterial spasms. Arterial spasms are frequent in children and in this case the signs of ischemia were prolonged thus making treatment difficult.

In the current study, the distal pulses returned suggesting that the cause was really vasospasm however the possibility of rechanneling after a thrombotic event can not be discarded.

Conclusion

Venous punctures in very low birth weight newborn babies can cause significant vasospasms with signs of ischemia distal to the puncture site.

References

- 1-Price VE, Chan AK. Arterial thrombosis in children. *Expert Rev Cardiovasc Ther.* 2008;6(3):419-28.
- 2-Godoy JMP, Marco LA. Trombose em recém-nascido. *Revista Paulista de Pediatria* 1997; 19:134-8.
- 3-Edstrom CS, Christensen RD. Evaluation and treatment of thrombosis in the neonatal intensive care unit. *neonatal hematology* 2000;24:623-41.
- 4-Schneppenheim R, Greiner J. Thrombosis in infants and children. *Hematology Am Soc Hematol Educ Program.* 2006:86-96.