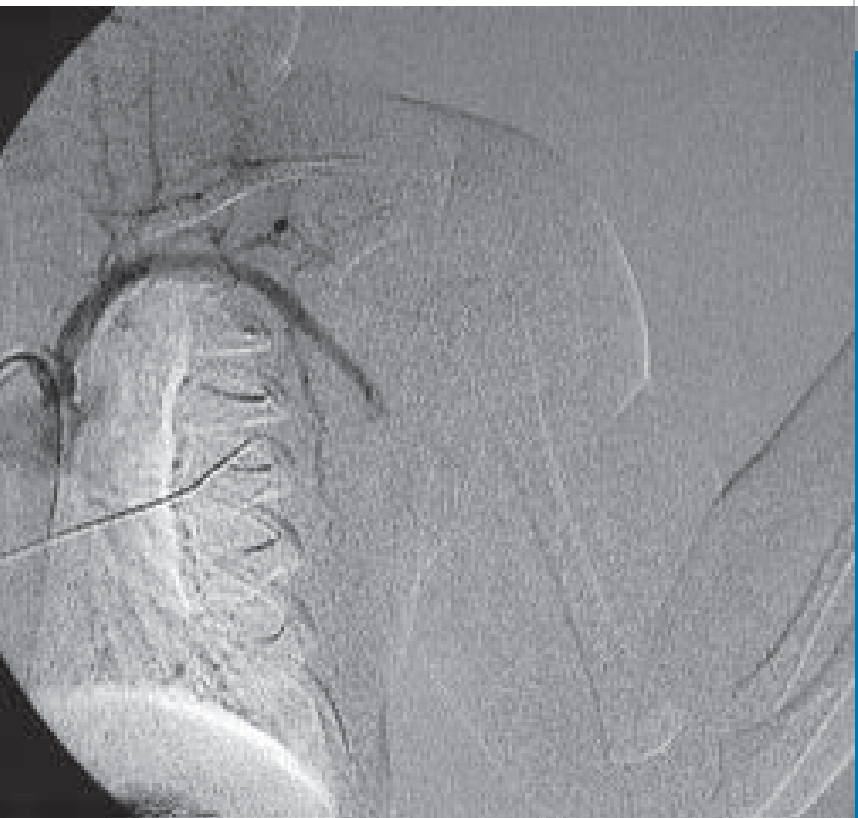
SWISS SOCIETY OF NEONATOLOGY

Local fibrinolysis with r-tPA in a newborn with brachial artery thrombosis



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BACKGROUND

Arterial thromboses are rare in neonates, however, early intervention might be crucial to prevent dangerous complications. Experience with r-tPA (recombinant tissue plasminogen activator) for fibrinolysis is limited in this age group.

CASE REPORT

At the age of 4 hours a male term infant (gestational age 39 2/7 weeks, birth weight 4110 g) was noted to have a pale and pulseless left arm. No blood vessels could be visualised distally to the proximal third of the upper arm by Doppler sonography. Using an umbilical artery catheter which had been advanced into the proximal part of the left subclavian artery, a thrombus measuring 3 cm in length could be demonstrated in the left brachial artery by digital subtraction angiography (Fig. 1).

After exclusion of any intracranial haemorrhages, local fibrinolysis with r-tPA (Actilyse, Boehringer Ingelheim) at a dose of 0.1 mg/kg/hour was performed over a 24-hour-period. Repeat angiography confirmed patency of the left brachial artery with reperfusion of the arm and hand (Fig. 2). Following systemic heparinisation for one week to prevent early rethrombosis, the infant was discharged on the 8th day of life on low-dose aspirin (1 mg/kg/day).

At the age of three months, the infant remained asymptomatic with normal vascularization of the previously affected arm. There was no evidence for thrombophilia (protein C, protein S, antithrombin III, APC resistance all within normal range).

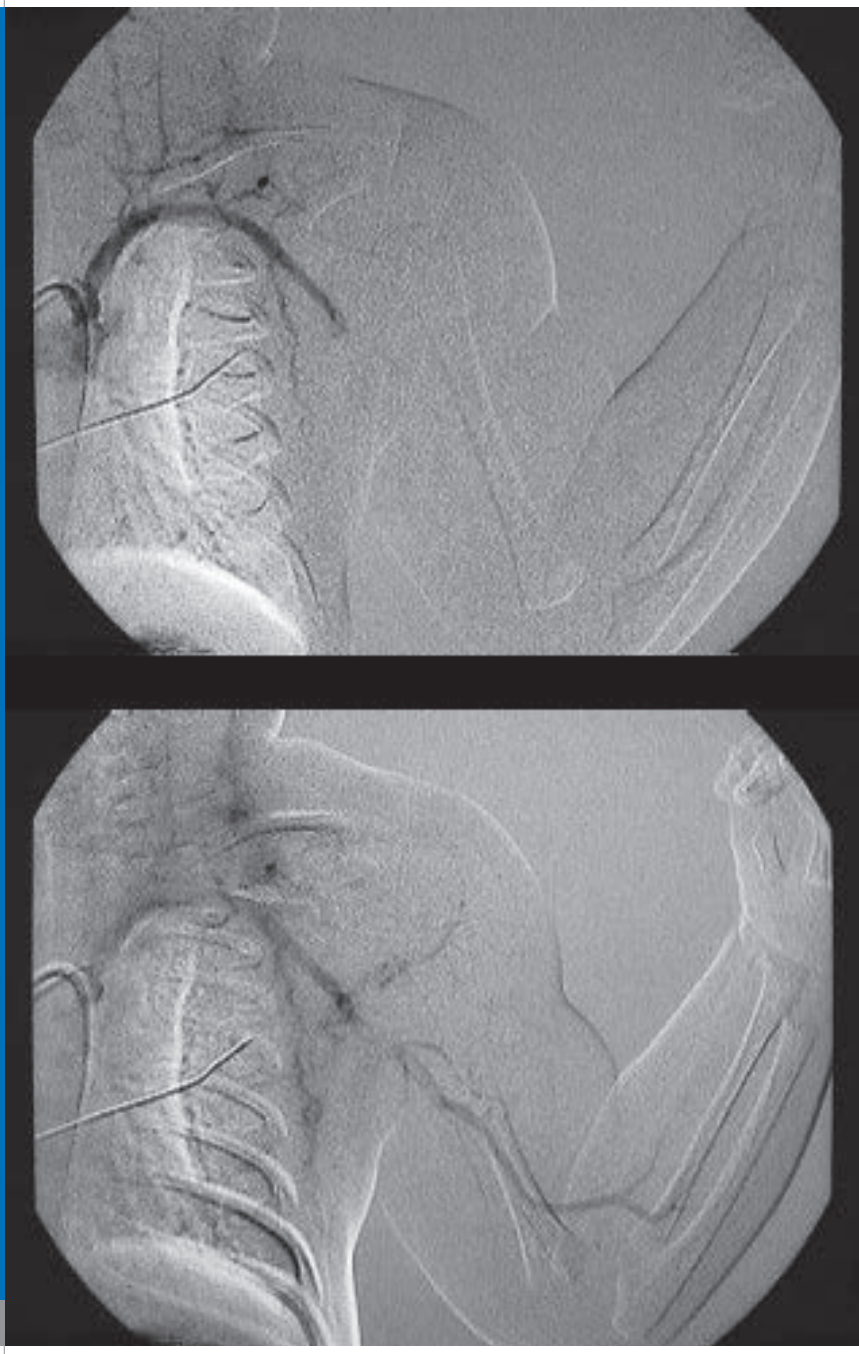

Fig. 1

DSA prior to fibrinolysis.
Top: early phase; bottom: late phase

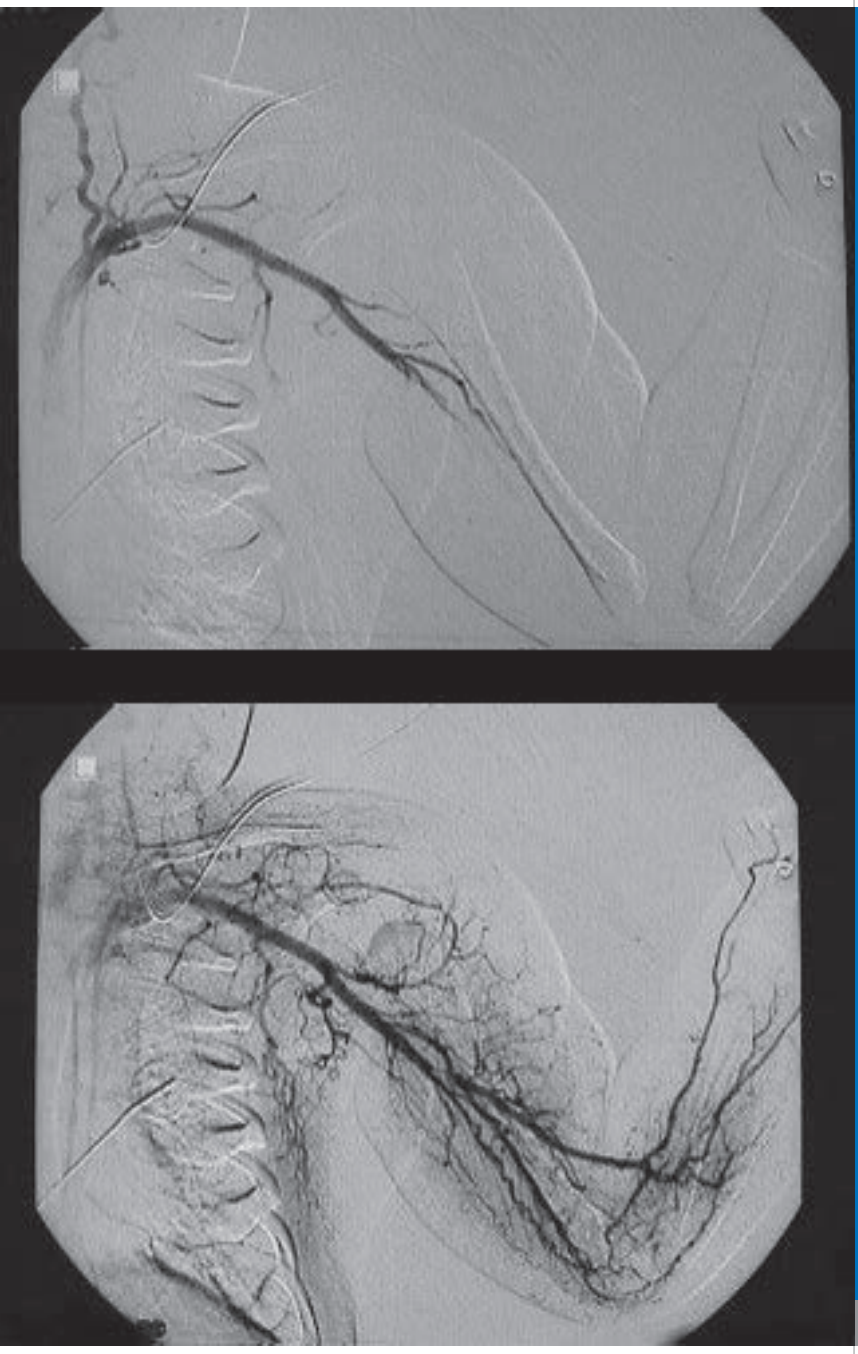

Fig. 2

DSA following fibrinolysis.
Top: early phase; bottom: late phase

DISCUSSION

It has been estimated that thromboses occur in 2.4/1000 neonates hospitalized in neonatal intensive care units (1), and spontaneous arterial thrombotic or thrombo-embolic events are even rarer. There are no randomized controlled trials that would help guide therapy and one has to rely on information from case reports.

The dose range and duration of r-tPA therapy in neonates described in the literature varies between 0.1-0.5 mg/kg/h over 6-36 h (2). Successful lysis has been observed in 88% of patients (complete 44%, partial 44%) (3). When local lysis is possible - as in our case - it is preferable to systemic lysis. The rate of complications appears to be low when contraindications are strictly observed and infusion rates of less than 0.5 mg/kg/h are used. In addition, complications are likely to be less common with local lysis. Our case demonstrates that local fibrinolysis with r-tPA can be successful in the neonatal age group.

REFERENCES

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