

Umbilical cord thrombosis and chorioamnionitis in neonatal arterial ischaemic stroke

A baby boy was delivered at term by emergency caesarean section because of abnormal fetal heart rate patterns during spontaneous labour. The umbilical cord arterial blood obtained at delivery had a pH of 6.97 and a lactate concentration of 12.1 mmol/L. The Apgar scores were 3 and 7, respectively, at 1 and 5 min. The proximal umbilical cord had a thrombotic aspect at delivery (figure 1). A thrombus was also identified in the ductus venosus at 1 hour of life. The boy presented left hemicorporeal seizures at 21 hours of life, which revealed a neonatal arterial ischaemic stroke (NAIS; figure 2). Placental histology revealed acute chorioamnionitis (online supplemental file). Screening for thrombophilia was negative in the boy and his mother.¹

The pathophysiology of NAIS remains unclear but may be multifactorial.² Two main mechanisms of NAIS are currently suspected: a cerebral embolism of a placental thrombosis and a focal cerebral arteritis secondary to chorioamnionitis.³ However, the intuitive embolic hypothesis is challenged,³ and perinatal inflammation is consistently reported as a major independent risk factor of NAIS in recent case-control studies.^{3,4}

The baby combined a lot of NAIS risk factors: nulliparity, male sex, multiple markers of difficulty with transition—fetal heart rate abnormality, emergency caesarean section, low Apgar score, low umbilical artery pH—and perinatal inflammation.²⁻⁴ Proximal umbilical cord thrombosis is highly unusual and has never been described in NAIS.

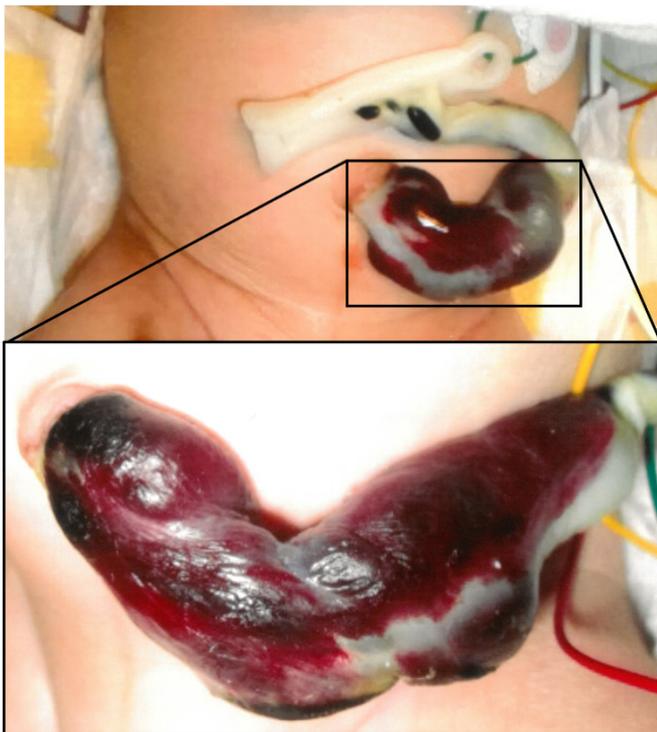


Figure 1 Umbilical cord at delivery.

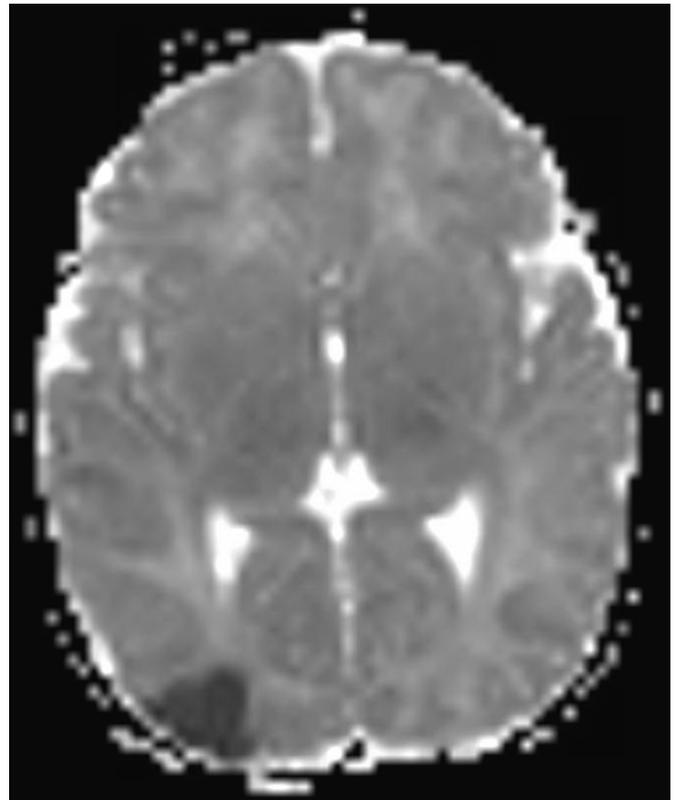


Figure 2 Focal restriction of diffusion on cranial MRI at 24 hours of life, delineating a recent ischaemic lesion in the superficial posterior territory of the right median cerebral artery.

Maroia Dridi,¹ Stéphane Chabrier,^{2,3} Tiphaine Raia-Barjat,^{3,4} Antoine Giraud⁵ 

¹Department of Pathology, Saint-Étienne University Hospital Center, Saint-Étienne, France

²French Center for Pediatric Stroke, Pediatric Physical Medicine and Rehabilitation, INSERM CIC 1408, Saint-Étienne University Hospital Center, Saint-Étienne, France

³INSERM U1059 Sainbiose, Jean Monnet University, Saint-Étienne, France

⁴Department of Obstetrics, Saint-Étienne University Hospital Center, Saint-Étienne, France

⁵Neonatal Intensive Care Unit, Saint-Étienne University Hospital Center, Saint-Étienne, France

Correspondence to Dr Antoine Giraud, Neonatal Intensive Care Unit, Saint-Étienne University Hospital Center, 42055 Saint-Étienne, France; antoine.giraud@univ-st-etienne.fr

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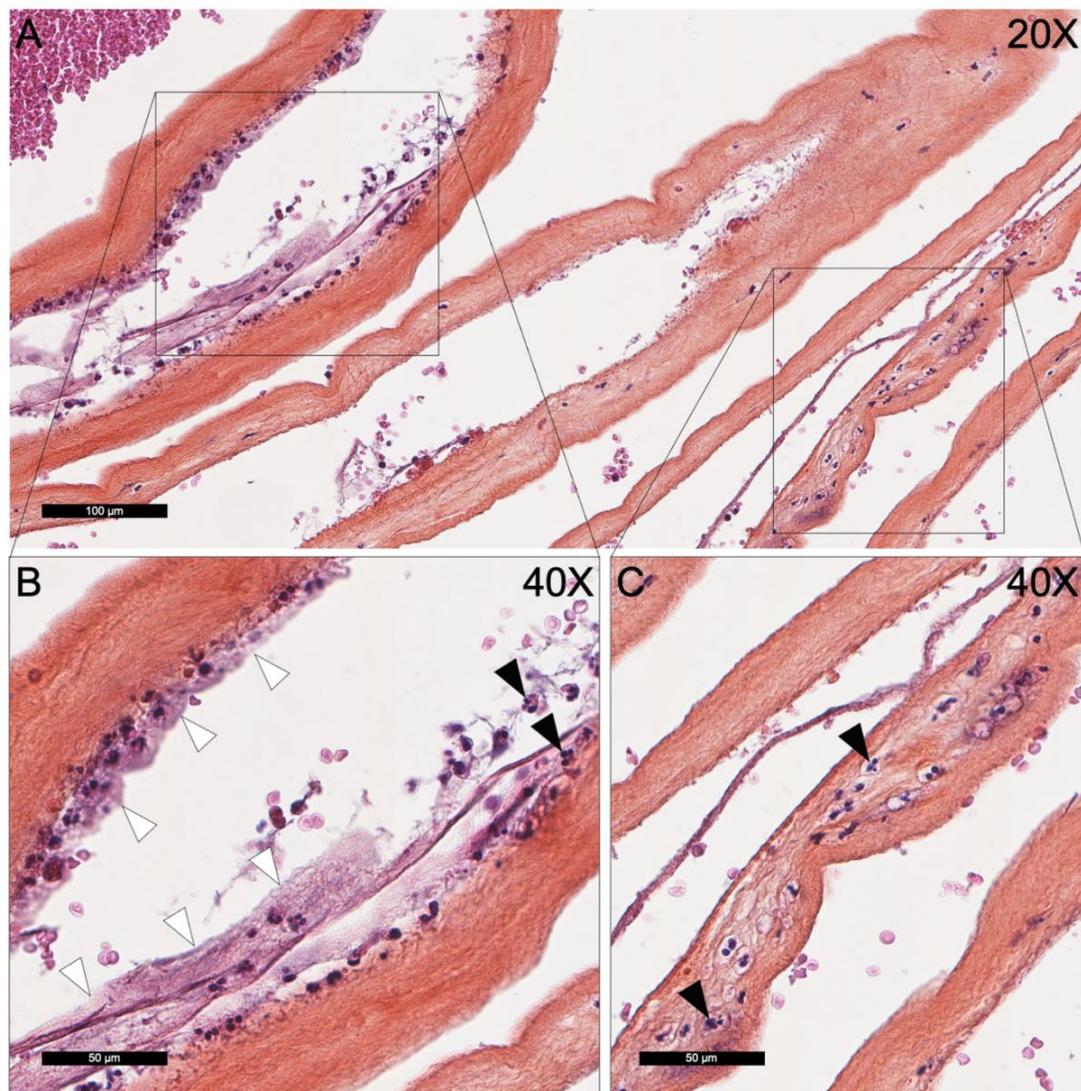
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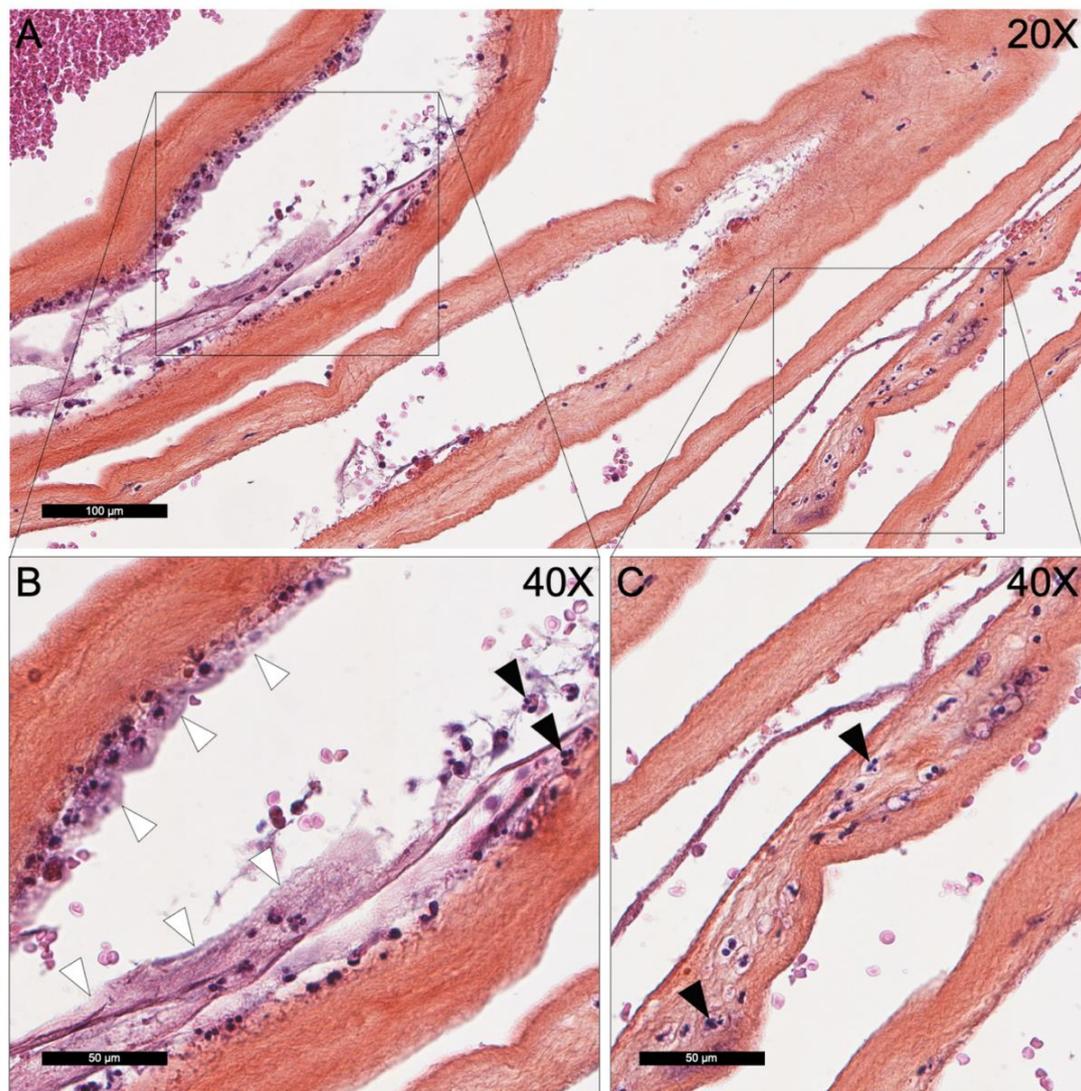
Antoine Giraud <http://orcid.org/0000-0003-2158-3930>

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Histology examination of the placenta on HES staining (A) revealing an acute chorioamnionitis with amniocyte necrosis (white arrowheads), karyorrhexis of PMN (black arrowheads) (B), and PMN infiltration of the amnion detached from the chorionic plate (C). Abbreviations: HES, hematoxylin-eosin-saffron; PMN, polymorphonuclear cell.



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