Cerebral injury in monochorionic twins complicated with twin anemia-polycythemia sequence

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Objective. Twin polycythemia sequence anemia (TAPS) is a rare complication of monochorionic (MC) pregnancies, which can occur after laser surgery for twin-twin transfusion syndrome (TTTS) or spontaneously. Management of this condition is still a matter of debate, in order to avoid demise or brain injury (BI) of both donor (anemic) and recipient (polycythemic) twin. The aim of our study is to evaluate the rate of pre- and post-natal brain injury and to define risk factors for these lesions.
Materials and Methods. Prospective study from 2006 to 2022 of MC twins complicated by TAPS, defined by US evaluation of Middle cerebral artery Doppler, and confirmed by placental evaluation after delivery, along with hematologic evaluation of twins. For each case fetal and/or neonatal magnetic resonance (MR) was considered. Management options were laser surgery, intrauterine transfusion (IUT) of donor twin, selective feticide, or preterm delivery (PD), tailored to each case.
Results. From the 50 pregnancies (100 twins) included, BI was found in 9 (9%), 6 donors (1 neonate) and 3 recipients, all neonates. Types of BI were: 2 intraventricular hemorrhage (IVH) grade 4, 1 IVH grade 3, 3 periventricular leukomalacia, 1 IVH grade 1, 1 mild parenchymal damage. **Table 1** shows an analysis of the variables.

Conclusions. Brain lesions in TAPS twins can develop before and after birth, especially in donors, with no evidence of any risk factor. An international randomized trial is ongoing to assess the best management option, and the report of such cases might help to identify a diagnostic work-up.

Table 1.

	Cases without brain lesions (N=91)	Cases with brain lesions (N=9)	p
TAPS			*0,9*
spontaneous	49 (53%)	5 (55%)	
post laser	42 (46%)	4 (44%)	
Treatment			*0,7*
Expectant management	45 (49%)	3 (33%)	
Laser	28 (30%)	4 (44%)	
IUT	3 (3%)	1 (11%)	
Preterm delivery	11 (12%)	1 (11%)	
Selective feticide	2 (2%)	-	
TOP	2 (2%)		
Stage TAPS			*0,8*
I	18 (19%)	2 (22%)	
II	48 (52%)	4 (44%)	
III	16 (17%)	2 (22%)	
IV	9 (10%)	1 (11%)	
Twin TAPS status			*0,29*
Donor	44 (48%)	6 (66%)	
Recipient	47 (51%)	3 (33%)	
GA at diagnosis	21,5 (16-33)	21 (19-31)	*0,37*
GA at delivery *	33 (27-38)	28 (24-36)	*0.17*