Table 1 Characteristics of the study cohort*

	Control group n = 23	PDA group n = 25
Gestation (weeks)	28 (26.1–29.5)	27 (25.9–28.3)
Birth weight (g)	1121 (948–1253)	980 (823–1220)
Antenatal steroids	10 (43)	7 (28)
Apgar at 1 min	5 (3–7)	4 (3–7)
Apgar at 5 min	7 (5–8)	7 (6–8)
Caesarean section	11 (48)	9 (36)
Maternal pre-eclampsia	2 (9)	4 (16)
Chorioamnionitis	3 (13)	6 (24)
Ventilation at birth	17 (74)	23 (92)
Surfactant at birth	17 (74)	23 (92)
Ibuprofen		
One course	NA	17 (68)
Two courses	NA	8 (32)
Surgical ligation	NA	5 (20)

NA, not applicable; PDA, patent ductus arteriosus.

*Data are median (interquartile range or percentage).

There were no significant differences between the two groups.

Table 2 Median N-terminal pro-B-type natriuretic peptide (NTpBNP) levels (pmol/l) in the two study groups on days 1, 3 and after treatment for the patent ductus arteriosus (PDA)

	Day 1		Day 3		Post-treatment	
	Control	PDA	Control	PDA	Control	PDA
NTpBNP	1435	1267	1127	6792	279	1199
25–75th	894–2550	531–2398	509–2884	3250–17309	93–484	401–2998
centiles						
Range	185–5407	98–10700	94–8030	402–35353	36–18989	188–9478
p Value	0.735		<0.001		0.001	

Levels were significantly higher in the PDA group on day 3 and post treatment.
Mann–Whitney U test was used to compare the medians.

curve was constructed for NTpBNP and the presence of a PDA with an area under the curve of 0.866 (95% CI 0.763 to 0.969, $p < 0.0001$). A cut-off value of 5000 pmol/l had a sensitivity of 70% and a specificity of 87%.

Discussion

Our study shows the potential use of NTpBNP in the management of a PDA in preterm infants. Several studies have established NTpBNP reference values for healthy term newborns at day 1 of life, ranging from 65 pmol/l to 641 pmol/l.² The higher levels in our cohort are probably multifactorial and reflect the demands placed on the preterm heart during the transitional phase. The lack of correlation between NTpBNP and the presence of a PDA at 12 h of age probably reflects the low degree of shunting during this transitional period. Validation in larger samples is needed to establish NTpBNP as a diagnostic and follow-up tool for PDA. The clinical applicability of NTpBNP may stem from its role in screening infants for the possible presence of an sPDA, with a high level indicating the need for echocardiographic evaluation, and may be of benefit at centres without onsite echocardiography.

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Routine mechanical ventilation for transferred neonates with duct-dependent congenital heart disease

Browning Carmo *et al* showed that neonates with duct-dependent congenital heart disease

(CHD) treated with low-dose prostaglandin E₁ (PGE₁) may not require mechanical ventilation for safe transport.¹ The Pediatric Department, University of Padova Neonatal Emergency Transport Service undertakes about 200 neonatal transports every year in the East-Veneto Region, Italy. The service has a population referral base of 2.3 million people over a radius of approximately 150 km. In the referral area, there are approximately 25 700 births/year in 25 units. The transfers are generally undertaken by ground ambulance and the average time for each transport is about 185 min (range 60–346 min).² According to the transport protocol, babies with known or suspected CHD with ductal dependency or with signs of circulatory or respiratory failure are suitable to be cared for by the dedicated transport team (a neonatologist, a nurse and paramedic ambulance personnel). The transport protocol does not recommend routine intubation for prevention of apnoea during PGE₁ infusion.

Between 1 January 2002 and 31 December 2006, 115 transferred neonates had cardiovascular problems; 51 (44%) were treated with PGE₁ infusion for CHD (59% cyanogen, 41% left outflow obstruction) and 9 (18%) were intubated as they had severe hypoxia or acidosis before the arrival of the transport team. Our PGE₁ starting dose (25–50 ng/kg/min) was higher than that reported by Browning Carmo *et al.*¹ Among the spontaneously breathing neonates, none required ventilation or emergency intubation and no adverse events were recorded. In agreement with Browning Carmo *et al.*,¹ our data show that for short distances, ground transport transfer of otherwise stable newborns with CHD needing PGE₁ infusion may be safe without routine mechanical ventilation, even with higher PGE₁ doses. An improved prenatal diagnosis (only 14% in our population) could help to prevent haemodynamic instability after birth, ensuring earlier and safer transfer. However, because of the potential deleterious effects of physiological derangements in these patients, the presence of personnel with expertise in neonatal resuscitation is advisable.³

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