

## Blood Group Antigens and Necrotizing Enterocolitis

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Necrotizing enterocolitis needs no introduction to paediatric surgeons or to neonatologists, remaining an important cause for morbidity and mortality despite decades of research. Although many aspects of the pathogenesis are understood, a full understanding of why some preterm infants get the disease and others do not remains elusive. In 2012, Thomson et al. published an intriguing paper showing that Bell's stage II–III NEC infants with AB blood group had a significantly increased risk of mortality compared with other blood groups [1]. On the basis of this observation, they formulated “the AB isoagglutinin hypothesis”, in which either maternally transferred or transfused isoagglutinins trigger an immune response in the immature infant gut, which has been shown to express A and B antigens both on the luminal surface (in mucins) [2] and on the endothelium [3]. The observations from Thomson et al. have now been extended in two independent studies. In this issue of the *Journal of Pediatric Surgery*, Dos Santos Martins and colleagues from Groningen report similar findings of worse outcomes (Bell's stage III, surgery and mortality) in Bell's stage  $\geq$ II NEC infants with AB blood group, but also show that this is unlikely to be related to fetal-maternal blood group incompatibility [4]. As the studies of both Thomson [1] and Dos Santos Martins [4] start from a population of infants with NEC and examine outcomes, neither can tell us whether the risk of a premature infant developing NEC is greater for those with blood group AB, although Dos Santos Martins et al. do compare the distribution of blood groups in their cohort of NEC infants with that of the Dutch population, and find an increased frequency of AB blood type in the NEC infants. Another recently published study directly examines the association of blood group with developing surgical NEC: Martynov et al. genotyped the ABO locus in 10,257 very low birth weight (VLBW, birth weight <1500g) infants and found that AB blood group was associated with a significantly greater risk of laparotomy for NEC [5]. Although none of these studies can prove causality, there are plausible biological mechanisms by which A and B antigens might influence the development of NEC, for example mucin glycoprotein interactions with microbiota or endothelial interaction with the coagulation pathway. As always with NEC, a complete understanding of the pathogenesis seems just around the corner. Careful studies such as those of Dos Santos Martins may eventually see us round the corner and enter the home straight.

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