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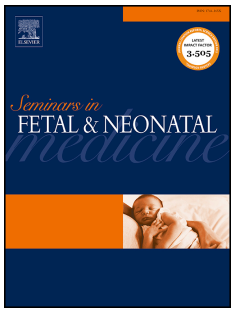

Hemodynamic assessment of the patent ductus arteriosus: Beyond ultrasound

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Hemodynamic assessment of the patent ductus arteriosus: beyond ultrasound

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SUMMARY

Assessment and management of a patent ductus arteriosus (PDA) in premature infants remains problematic. The more immature the infant, the more likely a PDA is to be present, due to lower spontaneous PDA closure rates. Clinicians now recognize that not all PDAs require treatment and that selection of the group of infants with a more hemodynamically relevant PDA, often manifesting as an increasing systemic-to-pulmonary shunt, is increasingly important. Ultrasound is the mainstay of diagnosis and physiological assessment of the PDA; however, there are other methodologies used to assess hemodynamic importance of the PDA. These range from assessment of clinical signs through biomarkers and finally to physiological assessment of the end-organ effect of the PDA, using methods such as cerebral Doppler or near infra-red spectroscopy. Extended assessment of a PDA's physiological effect may lead to a more individualized approach to PDA treatment.

Keywords:

Preterm

Neonate

Patent ductus arteriosus

Hemodynamics

Near-infrared spectroscopy

1. Introduction

Parameters to consider when deciding whether to treat a patent ductus arteriosus (PDA) in the preterm infant include gestational age, postnatal age, level of respiratory support, existing comorbidities, clinical factors, ultrasound features of the PDA, including size, and hemodynamic effect and cardiac biochemical markers. The definition of what constitutes a hemodynamically significant PDA (hsPDA) varies between clinicians and