



PRETERM PATENT DUCTUS ARTERIOSUS MANAGEMENT-CONTROVERSY CONTINUES.

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ABSTRACT **INTRODUCTION:** Correlation of clinical signs with echocardiographic findings for the decision of PDA treatment can be appropriate to prevent unnecessary medical treatments.

AIMS and OBJECTIVES: Primary - To study the clinical characteristics of hemodynamically stable PDA Secondary - To correlate the clinical parameters with echocardiographic Hs PDA, need of medical management, requirement of surgery and closure.

RESULTS: 66.7% babies in moderate group presented with bounding pulse than with mild and severe group, 71% in severe PDA had increased pulse pressure, 75% in severe had murmur, 71% in severe had increased HR, 100% in severe had increased RR.

CONCLUSION: Clinical features are correlated well with echocardiographically significant PDA. Presence of multiple clinical features predict severity of PDA Correlation of clinical signs with echo findings for the PDA treatment can be appropriate to prevent unnecessary medical treatments.

KEYWORDS : Preterm, PDA, Clinical parameters, Management.

INTRODUCTION

Patent ductus arteriosus [PDA] is a major cause of morbidity in preterm infant. Female patients with PDA outnumber males 2 : 1. PDA is a common problem in premature infants, as the smooth muscle in the wall of the preterm ductus is less responsive to high Po₂ and therefore less likely to constrict after birth¹. In these infants, it can cause severe hemodynamic derangements and several major sequelae². When a term infant is found to have a PDA, the wall of the ductus is deficient in both the mucoid endothelial layer and the muscular media². In the premature infant, the PDA usually has a normal structure. Thus, a PDA persisting beyond the 1st few wk of life in a term infant rarely closes spontaneously or with pharmacologic intervention. Early pharmacologic or surgical intervention is not required in a premature infant as spontaneous closure occurs in most instances².

Studies conclude that PDA is an innocent bystander. Treatment of only echocardiographic significant PDA will expose the premature neonates to the adverse effects of the medications. Correlation of clinical signs with echocardiographic findings for the decision of PDA treatment can be appropriate to prevent unnecessary medical treatments³.

We want to find out whether we need to incorporate both echo and clinical features to decide on the pharmacological treatment.

Objectives:

Primary - To study the clinical characteristics of Hemodynamically significant PDA (Hs PDA)

Secondary - To correlate the clinical parameters with echo cardiographic Hs PDA, Need of Medical management, complications of the medical management, requirement of surgery and closure rate.

MATERIALS AND METHODS:

Inclusion criteria:

Both intra and extra mural babies, Preterm and late preterm (up to 36 weeks completed) babies having diagnosed as clinical or echocardiographic PDA, having or not received pharmacological treatment

Exclusion criteria:

Congenital malformations and term babies with PDA

Study design: Retrospective Observational Study

Sample size: 55 preterm and late preterm babies of both intramural and extramural.

Study period :- 2 years – Jun 2017 - May 2019

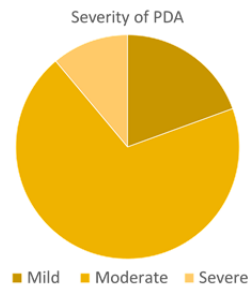
Records of the babies who were diagnosed as PDA was analyzed.

Data was presented as Mean and standard deviations, percentage and distribution of frequency.

PDA was classified as
Mild < 1.5 mm
Moderate > 1.5 to 3 mm
Severe > 3mm

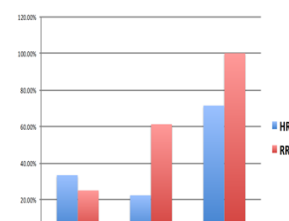
Hs PDA: Tachycardia (>160/per min), tachypnea (>60 per min) or apnea, peripheral bounding pulses due to increased pulse pressure, systemic hypotension with hyper dynamic precordium, increased need for respiratory support, feeding intolerance or oliguria (urine output <1ml/kg/hr)⁴.

RESULTS



	Mild	Moderate	Severe
Mean Gestation(weeks)	31.36 ± 4.68	29.92±3.45	33.63±3.73
Mean Birth Weight(gms)	1453±778.2	1204.3±572	2232.85±634.47
Mean age at Presentation(days)	3.25±1.5	2.48±1.5	4±4.92

- Total number of babies studied was – 55
- Mean PDA size: 2.72±1.04mm
- Of these, there were 19.4% babies in mild, 69.4% in the moderate group and 11.1% in the severe PDA group.



- 66.7% babies in the Moderate group presented with Bounding pulse than mild and severe group.
- 71.4% in the Severe PDA group had increased Pulse Pressure vs 62.5% in Moderate and 50% in Mild group.
- 75% of severe group had murmur as compared to 62.5% in moderate group and 64.3% in mild group.
- A Significant number of babies presented with Increased HR in the severe group 71.4% Vs 22.4% and 33.3% in mild and moderate group respectively.
- 100% of the babies in the severe PDA group had increased RR as compared to 61.2% in the mod group and 25% in the mild group.

DISCUSSION

- In term infants, the ductus arteriosus normally constricts after birth and become functionally closed by 72 hours of age⁵.
- In preterm infants, closure is delayed remaining open at 4 days of age.
- In the trail of early versus late indomethacin treatment of infants born at 26 through 31 weeks of gestation in whom PDA was confirmed by echocardiography on day 3, the ductus closed spontaneously by 9 days of age in 78% of those randomized to late intervention⁶.
- Prophylactic use of indomethacin in confirmed PDA is associated with increased risk of IVH⁷.
- Less frequent use of surgical ligation in infants with PDA after failure of indomethacin prophylaxis was associated with a lower rate of Necrotising enterocolitis⁸.
- Early identification of infants with PDA who are at risk on the basis of echocardiographic and hemodynamic monitoring allow more selective treatment in first 2 weeks after birth³.
- Initial medical management in PDA includes increased ventilator support, fluid restriction, and diuretic therapy.

Summary

- Mean PDA size: 2.72±1.04mm
- Increase in the pulse pressure and murmur was correlated with severe PDA- statistically not important.
- Increase in the Heart rate and respiratory rate was frequently observed in severe PDA group correlated with severity.
- HR, RR, wide pulse pressure and murmur was correlated with higher PDA size.

CONCLUSION:

- Clinical features are correlated well with echocardiographically significant PDA.
- Presence of multiple clinical features predict severity of PDA.
- Correlation of clinical signs with echocardiographic findings for the decision of PDA treatment can be appropriate to prevent unnecessary medical treatments.

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