Efficacy of an individualized strategy for the pharmacological closure of PDA with ibuprofen in preterm infants: evaluation by echocardiography

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Background and Aims The aim of study is to evaluate the applicability of an individualized strategy for closure of PDA in preterms. We verified the closure rate and consequently the failure of PDA closure, the rate of reopening and the onset of secondary outcomes.

Methods We recruited 36 preterms (27 weeks mean GA; mean birth weight 828 g) with PDA and candidates for the pharmacological closure according to the internal protocol. Using serial ECHOS, we evaluated the persistence of the first dose of ibuprofen, establishing the need to repeat a second or third dose each 24 hours.

Results We observed a rate of complete closure of 77.7% (33.3% after the first dose, 30.5% after the second and 13.8% after the third dose). The incidence of re-opening is 16.6%, without significant difference related to the number of doses (p=1).

Conclusion The individualized strategy allows to expose preterms to a minor amount of doses, without changing the number of closure and outcomes. However, the extreme GA are associated with an increased risk of failure of closure and reopening.

Measurement of bone density by DXA during antenatal period in relationship to the incidence of fractures in the first year of life

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Background and Aims We assessed bone mineral density (BMD), bone mineral content and bone area of premature infants with antenatal risk factors. The bone mass was calculated by dual energy X-ray absorptiometry (DXA) (Hologic Discovery A, Madison, WI, USA). The aim of the study was to evaluate the bone mineral density (BMD) and bone mineral content (BMC) in the first year of life.

Methods A total of 60 premature infants (mean gestational age 34.7 weeks, 26.6% male, 40% female), aged 1-12 months, with a body weight of 8-14 kg, were enrolled in the study. Bone density was measured at the lumbar vertebrae, femur and humerus. The DXA was used to determine the bone mass and the bone density. The bone mineral content was calculated using the following formula: BMC = Mass × Bone Density. The data were analyzed using the Student’s t-test.

Results The mean bone density at the lumbar vertebrae was 0.86 g/cm² (SD ± 0.25), and at the femur was 0.66 g/cm² (SD ± 0.18). The bone mineral content at the lumbar vertebrae was 5.76 g (SD ± 2.73) and at the femur was 3.52 g (SD ± 1.18). The bone mineral content at the humerus was 1.45 g (SD ± 0.52). The bone mineral density at the lumbar vertebrae was significantly lower in males compared to females (p<0.05). There was no significant difference in bone mineral density between male and female infants at the femur and humerus.

Conclusion Premature infants with antenatal risk factors have lower bone mineral density and lower bone mineral content compared to healthy full-term infants. The bone density at the lumbar vertebrae is significantly lower in males compared to females.

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