PREDICTORS BONE MINERALIZATION DISORDER

IN LOW BIRTH WEIGHT INFANTS

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ABSTRACT

Background: Despite significant advance in neonatal care, the occurrence of bone mineralization disorders in preterm infants has been increased. Dual X-ray absorptiometry (DXA) is a gold standard for assessing bone mineral content (BMC) has been not available yet in every hospital. Biochemical markers ie: alkaline phosphatase (ALP), calcium, phosphorus and vitamin D have been used to screen of bone mineralization disorder.
Objective: To establish predicting factor of bone mineralization disorder in low birth weight infants
Method: Retrospective cohort study was conducted during July-November 2019. The data was collected from register previous study. Preterm infants <37 week of gestational age and birth weight < 2500 g were included in study at Dr. Sardjito hospital. Biochemical markers and DXA were measured at term age. Lower bone mineral content was defined as BMC below or equal to respective median value. Bivariate and multivariate logistic regression analysis were performed to identify the most predictor of bone mineralization disorder in low birth weight infants
Results: Total of 60 samples met the criteria. Median of total BMC was 5.95 g. In multivariate analysis, we found predictors of bone mineralization disorder were birth weight <1500 g (OR 21,33; 95% CI 4,22-107,79) and ALP > 500 U/L (OR 7,35; 95% CI 1,08- 49,95).
Conclusion: Birth weight <1500 g and ALP > 500 U/L were the predictors of bone mineralization disorder in low birth weight infants
Keyword: Bone mineral content, dual X-ray absorptiometry, low birth weight, alkaline phosphatase, predictor

INTISARI

Latar Belakang: Peningkatan kemajuan dalam perawatan neonatus menyebabkan peningkatan gangguan mineralisasi tulang pada bayi kurang bulan. *Dual X-ray absorbtiometry* (DXA) merupakan pemeriksaan baku emas untuk menilai *bone mineral content* (BMC), tetapi tidak selalu tersedia di setiap rumah sakit. Pemeriksaan marker biokimia yaitu alkali fosfatase (ALP), kalsium, fosfat dan vitamin D digunakan untuk skrining gangguan mineralisasi tulang.
Tujuan: mengetahui faktor prediktor yang mempengaruhi gangguan mineralisasi tulang pada BBLR
Metode: Desain penelitian kohort retrospektif, dilakukan bulan Juli-November 2019. Data subyek penelitian diambil dari data register penelitian sebelumnya. Kriteria inklusi adalah bayi baru lahir < 2500 gram dan umur kehamilan <37 minggu yang dirawat di RSUP Dr. Sardjito. Marker biokimia dan pemeriksaan DXA dilakukan pada usia aterm. BMC rendah adalah nilai BMC dibawah atau sama dengan nilai median BMC. Regresi logistik bivariat dan multivariat digunakan untuk mengidentifikasi faktor prediktor gangguan mineralisasi tulang pada BBLR.
Hasil: Jumlah sampel adalah 60 bayi yang memenuhi kriteria. Nilai median BMC total adalah 5,95 g. Faktor-faktor yang mempengaruhi gangguan mineralisasi tulang pada BBLR adalah berat lahir <1500 gram (OR 21,33 IK 95% 4,22-107,79) dan ALP >500 U/L (OR 7,35 IK 95% 1,08-49,95).
Simpulan: Berat lahir < 1500 g dan ALP > 500 U/L merupakan faktor prediktor gangguan mineralisasi tulang pada BBLR.
Kata kunci: *Bone mineral content*, *dual X-ray absorptiometry*, bayi berat lahir rendah, alkali fosfatase, prediktor