Hubungan antara gambaran radiologis fraktur kompresi vertebra dengan kadar kalsium dan fosfat serum pada penyakit ginjal tahap akhir = Association between radiological imaging of vertebral compression fractures with calcium and phosphate levels in end-stage renal disease

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Abstrak

Latar Belakang: Pasien dengan penyakit ginjal tahap akhir (PGTA) mempunyai risiko mengalami kelainan mineral tulang yang dapat mengakibatkan ketidakseimbangan proses osteoklas, osteoblas serta hormon. Situasi ini menjadi siklus negatif yang berujung pada peningkatan risiko fraktur kompresi vertebra (osteoporosis). Tulang vertebra menjadi perhatian utama karena mudah terjadi fraktur pada anak PGTA.

Tujuan: Untuk mengetahui proporsi fraktur kompresi vertebra, gambaran demografi, klinis, dan laboratorium pada anak PGTA di RSCM.

Metode: Studi potong lintang ini meneliti anak PGTA yang mengalami fraktur kompresi. Dilakukan foto x-ray vertebra dan pemeriksaan kadar kalsium dan fosfat terhadap seluruh subjek penelitian.

Hasil: Total didapatkan 70 subjek yang memenuhi kriteria inklusi, 17 mengalami fraktur kompresi vertebra yang didominasi oleh tipe concave dan wedge. Subjek penelitian ini didominasi oleh anak laki-laki sejumlah 40 anak dengan rerata; usia 12,7 tahun, rerata kadar kalsium subjek dengan fraktur 8,6 ± 2,0 mg/dL, rerata kadar fosfat subjek dengan fraktur 6,9 ± 1,9 mg/dL. Nyeri pinggang (p=0.000) dan kadar fosfat serum (p=0.019) memiliki hubungan bermakna secara statistik terhadap kejadian fraktur kompresi vertebra. Uji kappa dua pemeriksa penelitian ini 0,9 artinya kesesuaian pembacaan x-ray sampel penelitan ini adalah hampir sempurna.

Kesimpulan: Prevalensi fraktur kompresi vertebra pada anak PGTA di RSCM sebesar 24,2 %. Laki-laki berisiko lebih tinggi mengalami fraktur kompresi vertebra. Mayoritas anak PGTA di RSCM memiliki kadar kalsium dan fosfat serum yang normal.
.....Background: Patients with end-stage renal disease (ESRD) have a risk of bone mineral abnormalities, which can lead to an imbalance in the osteoclast and osteoblast processes as well as hormones. This situation creates a negative cycle that increases the risk of vertebral compression fracture (osteoporosis). The vertebral bones are the primary concern because children with ESRD are prone to develop compression fracture.

Objective: To determine the proportion of vertebral compression fractures (osteoporosis), as well as the demographic, clinical, and laboratory characteristics of children with ESRD at RSCM.

Methods: This cross-sectional study investigated children with ESRD who experienced compression fractures. X-ray imaging of the vertebrae and measurements of calcium and phosphate levels were

conducted for all study subjects.

Results: A total of 70 subjects met the inclusion criteria, with 17 experiencing vertebral compression fractures, predominantly of the concave and wedge types. The study subjects were predominantly male, total 40 children, with an average age of 12.7 years. The mean calcium level in subjects with fractures was 8.6 ± 2.0 mg/dL, and the mean phosphate level was 6.9 ± 1.9 mg/dL. Lower back pain ($p=0.000$) and serum phosphate levels ($p=0.019$) had statistically significant associations with the occurrence of vertebral compression fractures. The kappa test between two examiners in this study was 0.9, indicating an almost perfect agreement in reading the X-ray samples.

Conclusion: The prevalence of vertebral compression fractures in children with PGTA at RSCM is 24.2%. Boys are at a higher risk of developing vertebral compression fractures. Most children with PGTA at RSCM had normal serum calcium and phosphate levels.