

Akurasi Diagnostik *Modified A to Z Radiograph Assessment Method* dalam Membedakan Tumor Tulang Primer Jinak dan Ganas

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INTISARI

Latar Belakang. Tumor tulang primer merupakan kondisi yang jarang namun dapat menyebabkan morbiditas signifikan. Radiografi merupakan pemeriksaan awal, tetapi interpretasinya masih bersifat subjektif dan bergantung pada pengalaman pemeriksa. *Modified A to Z Radiograph Assessment Method* dikembangkan sebagai sistem penilaian terstruktur yang mencakup *skeletal maturity*, lokasi lesi, destruksi korteks, batas lesi, reaksi periosteal, fraktur patologis, dan zona transisi untuk membantu membedakan tumor tulang jinak dan ganas.

Tujuan. Menilai akurasi diagnostik *Modified A to Z Radiograph Assessment Method* dalam membedakan tumor tulang primer jinak dan ganas dengan menggunakan hasil histopatologi sebagai standar emas.

Metode Penelitian. Penelitian *cross-sectional* ini menggunakan data sekunder radiografi tulang panjang periode 1 Januari 2023 hingga 31 Agustus 2025 dilakukan di RSUP Dr. Sardjito Yogyakarta. Sebanyak 102 radiografi tulang panjang dengan diagnosis tumor tulang primer jinak dan ganas berdasarkan hasil histopatologi dinilai dalam penelitian ini. Dua dokter spesialis radiologi melakukan penilaian secara independen menggunakan *Modified A to Z Radiograph Assessment Method*. Analisis dilakukan untuk menentukan nilai *cut-off* serta menghitung sensitivitas, spesifisitas, dan akurasi diagnostik.

Hasil Penelitian. *Modified A to Z Radiograph Assessment Method* menunjukkan reliabilitas interobserver yang sangat baik. Seluruh parameter radiografi memperlihatkan perbedaan bermakna antara kelompok jinak dan ganas. Nilai *cut-off* 3,5 memberikan performa diagnostik terbaik dengan sensitivitas 98–100% dan spesifisitas 96,1%. Akurasi diagnostik metode ini adalah 97,1–98,0%.

Kesimpulan. *Modified A to Z Radiograph Assessment Method* memiliki akurasi diagnostik yang tinggi dalam membedakan tumor tulang primer jinak dan ganas pada tulang panjang. Metode ini disarankan sebagai alat bantu penilaian radiografi pada evaluasi awal lesi tumor tulang.

Kata kunci: tumor tulang, radiografi, diagnosis, histopatologi

Diagnostic Accuracy of the Modified A to Z Radiograph Assessment Method in Differentiating Benign and Malignant Primary Bone Tumors

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ABSTRACT

Background: Primary bone tumors are rare conditions but can cause considerable morbidity. Radiography is the initial imaging modality. However, its interpretation remains subjective and depends on the examiner's experience. The Modified A to Z Radiograph Assessment Method was developed as a structured evaluation system encompassing skeletal maturity, lesion location, cortical destruction, lesion margins, periosteal reaction, pathological fracture, and zone of transition to differentiate benign from malignant bone tumors.

Aim of the Study: To assess the diagnostic accuracy of the Modified A to Z Radiograph Assessment Method in differentiating benign from malignant primary bone tumors, using histopathology as the gold standard.

Methods: This cross-sectional study utilized secondary long-bone radiographs collected between January 1, 2023, and August 31, 2025, at Dr. Sardjito General Hospital, Yogyakarta. A total of 102 long-bone radiographs from patients with benign and malignant primary bone tumors, confirmed by histopathology, were evaluated. Two radiology specialists independently assessed all radiographs using the Modified A to Z Radiograph Assessment Method. Statistical analysis was performed to determine the optimal cut-off value and to calculate sensitivity, specificity, and diagnostic accuracy.

Results: The Modified A to Z Radiograph Assessment Method demonstrated excellent interobserver agreement. All radiographic parameters differed significantly between benign and malignant groups. A cut-off score of 3.5 yielded optimal discriminatory performance, with sensitivity of 98–100% and specificity of 96.1%. The overall diagnostic accuracy ranged from 97.1% to 98.0%.

Conclusion: The Modified A to Z Radiograph Assessment Method exhibits high diagnostic accuracy and strong reliability for distinguishing benign from malignant primary bone tumors of the long bones. These findings support its use as a radiographic screening tool in the initial evaluation of bone tumor lesions.

Keywords: bone tumor, radiography, diagnosis, histopathology