

Early Osteoporosis Evaluation in Pituitary Adenomas Through Opportunistic CT-based Radiomics

BT Radyomik Analizi ile Pitüiter Adenom Hastalarında Erken Osteoporoz Değerlendirme Potansiyeli

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Dear Editor,

I would like to congratulate the authors for their valuable contribution to the literature with this innovative and elegantly designed study. The work by Güngör et al. (1), which explores the opportunistic prediction of osteoporosis using clivus-based radiomic features derived from routine cranial computed tomography (CT) imaging, represents a remarkable step forward in integrating radiomics and musculoskeletal assessment within daily clinical practice. I sincerely thank the authors for presenting a method that has the potential to enhance early osteoporosis detection using imaging data already available for other clinical purposes. Their study provides both scientific insight and practical applicability, and I believe it will stimulate further research in this promising field (1).

The valuable insights provided by this study have encouraged us to consider that the radiomic approach described by the authors may hold additional clinical utility in another important context. The successful extraction of bone-related information from cranial CT images suggests that this method could be extended to certain endocrine disorders in which osteoporosis is both common and frequently under-recognized. In particular, patients with pituitary adenomas—especially prolactinomas, adrenocorticotrophic hormone (ACTH)-secreting adenomas, and select growth hormone-producing tumors—often present with significant bone loss at the time of diagnosis (2,3).

Despite the limited diagnostic role of CT in pituitary adenomas, a subset of patients arrive at the stage of definitive diagnosis

with a previously performed cranial CT scan. This often occurs for reasons such as the evaluation of acute or chronic headache before the pituitary lesion is suspected, exclusion of alternative neurological conditions, or in situations where magnetic resonance imaging is contraindicated or temporarily unavailable. Therefore, in patients with prolactinoma along with other pituitary adenomas known to increase fracture risk such as ACTH-producing adenomas (Cushing disease) and, to a lesser extent, growth hormone-secreting adenomas opportunistic assessment of bone health using clivus-based radiomic features from these existing CT examinations may provide significant clinical advantage (2,3). Such an approach would allow early detection of osteoporosis at the moment the pituitary disease is first recognized, eliminating the immediate need for additional imaging dedicated to bone evaluation.

This strategy may be particularly valuable because prolactinoma is strongly associated with secondary osteoporosis and vertebral fragility fractures, especially in male patients in whom hypogonadism is frequently under-recognized (4). The ability to derive bone quality information from CT images already available in the patient's diagnostic workflow represents a practical, cost-effective, and innovative method for improving the early identification and management of osteoporosis (5,6).

I believe that this concept not only aligns with the opportunistic CT-based framework proposed in the study but may also guide future research exploring the integration of radiomic bone analysis into the routine evaluation of pituitary disorders.

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Footnotes

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