

AbstractID: 2742 Title: Improvement of Osteoblastic Metastases Diagnosis from Skeletal Digitized Radiographs

Purpose: To evaluate the diagnostic usefulness of a method based on gray level parameters to distinguish between skeletal digitized radiographs of healthy bone and osteoblastic metastases.

Method and Materials: The authors previously developed an automated computerized scheme in order to characterize healthy bone on digitized radiographs (DR). We obtained an optimized healthy bone classification to compare with pathological bone: cortical (CO), trabecular (TR) and flat (FB) bone. In the present study, 35 osteoblastic metastases DR (size of 0.175-mm pixel and 4,096 gray levels) were classified in non flat bone (OM1) and flat bone (OM2). The parameters calculated were: mean, standard deviation and coefficient of variation (MGL, SDGL and CVGL) based on gray level histogram analysis. Diagnostic utility was quantified by measurement of parameters on healthy and pathological bone DR, yielding quantification of area under the ROC curve, Az.

Results: All three image parameters show high and significant values of Az when comparing TR and OM1, showing MGL the best discriminatory ability (0.972). In reference to flat bones, MGL do not show any diagnostic capacity between healthy and OM2 groups (0.497), but this goal can be satisfactory achieved using SDGL or CVGL both showing a similar diagnostic ability (0.851 and 0.828 respectively).

Conclusion: Our results confirm that this method is useful for differential diagnosis between healthy bone and osteoblastic metastases on skeletal DR.

Conflict of Interest (only if applicable):

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