Radiographic Appearance of Benign Versus Malignant-Associated Bone Infarcts in Dogs

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In the literature

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FROM THE PAGE ...

A bone infarct is an area of osteonecrosis that develops following an ischemic event. Bone infarcts can be of benign or malignant origins and have been reported to occur secondary to previous surgery (eg, total hip replacement) or bone neoplasia (eg, osteosarcoma).[1-7] The radiographic appearance of malignant-associated bone infarcts has been described but benign infarcts have not.

This retrospective study aimed to assess radiography in discerning benign versus malignant-associated bone infarcts. Two board-certified radiologists were blinded to case signalment and ultimate histologic diagnosis and asked to assess radiographs of bone infarctions, classifying them as likely benign, likely malignant associated, or undistinguishable in nature.

Of the 49 included cases, 33 had a histologic diagnosis of benign infarct and 16 had a malignant-associated infarct. Only 48% of the benign infarcts and 38% of the malignant-associated infarcts were correctly identified by both radiologists. Patterns of both the periosteal response and the medullary lysis were the only radiographic features significantly associated with the histologic diagnosis. Despite this finding, there was substantial crossover, with a high percentage of dogs in both histologic groups having an aggressive periosteal response and an aggressive medullary lysis pattern.

Overall, significant overlap was observed in the radiographic appearance of benign and malignant-associated infarcts, suggesting that radiographic assessment is not very useful in distinguishing the histologic nature of bone infarcts. These results underpin the need for additional diagnostics for bony lesions detected on radiology, even those with a radiographic pattern typical of an aggressive process.

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… TO YOUR PATIENTS

Key pearls to put into practice:

1 Bone infarcts in dogs can be either benign or malignant in nature and can have considerable variability in radiographic features. Furthermore, the radiographic features of benign and malignant-associated infarcts have many similarities, making radiography an unreliable diagnostic modality for identifying the nature of the infarct.

2 Given the overlap in radiographic signs, benign bone infarcts in dogs could easily be misclassified as a malignant process, for which limb amputation is often the recommended surgical intervention. This finding underscores the importance of performing additional diagnostic evaluations (eg, bone biopsy) in dogs with an aggressive radiographic appearance.

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Suggested Reading

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