

NORMAL CYTOLOGICAL BONE MARROW EXAMS ASSOCIATED TO ALTERED HEMOGRAMS IN CATS: A RETROSPECTIVE STUDY



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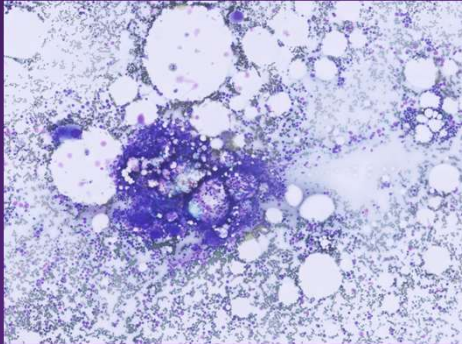


Fig. 1: Normal bone marrow spicule. Wright Giemsa 10X

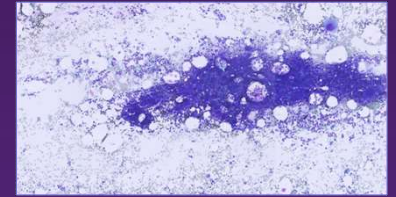


Fig. 2: Normal bone marrow spicule. Wright Giemsa 10X

Background. Bone marrow and blood smear cytological analysis together with a complete hemogram represent the only method for examining the hematopoietic tissue and function. Sometimes in clinical practice, pathological hemograms are associated with cytological normal bone marrow exams.

Objective and Methods. The aim of this retrospective study was to evaluate a series of feline cytological bone marrow samples, together with hematological and clinicopathological data. This, to judge if the normality of these cytological exams is reliable or if it indicates an intrinsic failure. Two-hundred-fourteen bone marrow samples and blood smears were examined using morphological and numerical criteria together with complete hemograms. Bone marrow cytological examinations were performed after the identification of hematological or clinical alterations such as anemia, leukocytosis, fever of unknown origin, and staging of neoplasia (i.e., lymphoma).

Results. Among the 214 bone marrow samples evaluated, 41 (19%) were classified as normal (Fig 1,2,3). However, only 4 of those cases (10%) exhibited normal hemograms (Fig 4,5,6,9). The most common hematological anomalies, often seen in combination, were anemia (56%), (Fig 7) thrombocytopenia (17%) (Fig 8) and leucopenia (10%). Furthermore, anemia associated with other abnormal hematological findings (51 %) and lymphoma (15%).

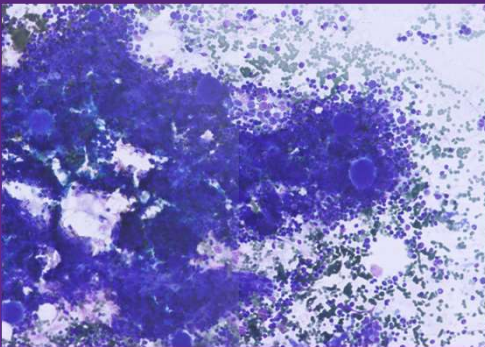


Fig. 3: Normal bone marrow spicule. Wright Giemsa 20X

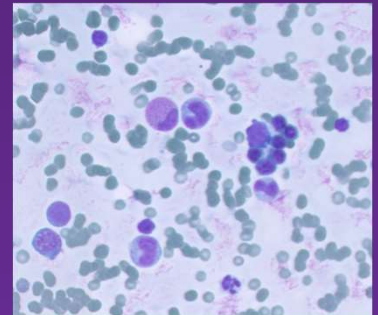


Fig. 4: Granulocytic precursors and erythroblastic island Wright Giemsa 10X

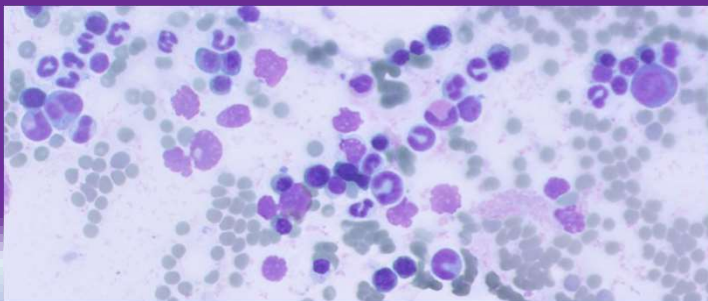


Fig. 5: Normal bone marrow erythroid and granulocytic precursors Wright Giemsa 40X

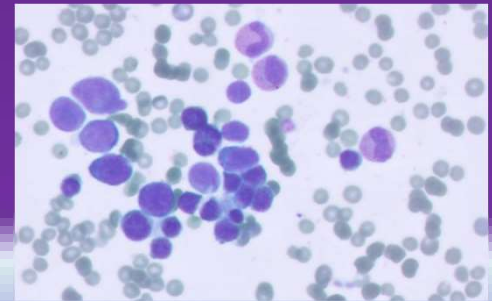


Fig. 6: Normal bone marrow erythroid and granulocytic precursors. Wright Giemsa 40X

Conclusion. This retrospective study suggests that bone marrow cytological exams, despite appearing normal in terms of morphological or numerical parameters, can still be associated with abnormal hemograms. As a result, they should not be automatically considered as clinically normal. Instead, they should prompt additional research and, occasionally, a second cytological bone marrow examination in the following days.

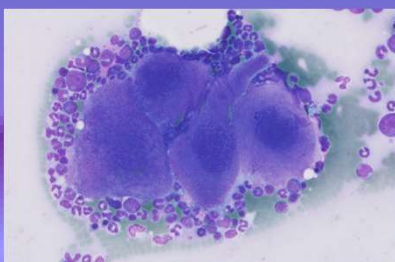


Fig. 7: Normal mature megakaryocytes. Wright Giemsa 20X

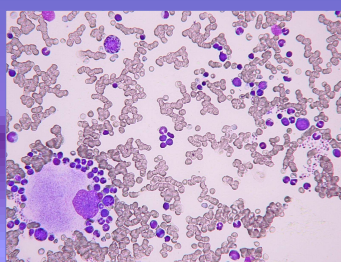


Fig. 8: Normal mature megakaryocyte and granulocytic and erythroid precursors Wright Giemsa 10X

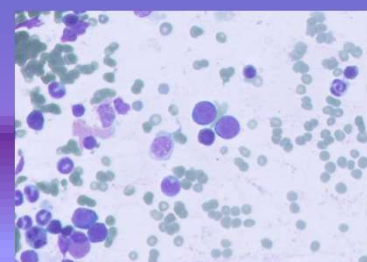


Fig. 9: Normal erythroid and granulocytes precursors. Wright Giemsa 20X