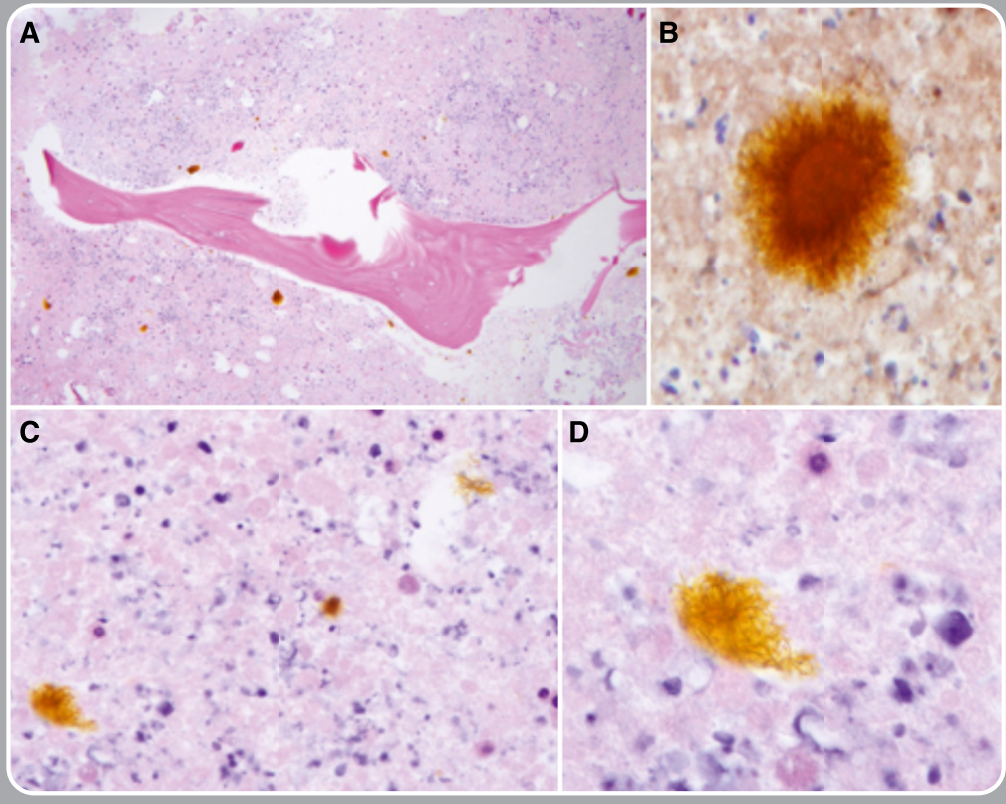
bloodwork
IMAGES IN HEMATOLOGY

Hematoidin



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A 53-year-old man with a 3-month history of anemia and thrombocytopenia was admitted for acute gastrointestinal bleeding. Peripheral blood counts demonstrated leukocytosis ($18.6 \times 10^3/\mu L$), anemia (hemoglobin level, 8.7 g/dL; hematocrit, 27%), and thrombocytopenia ($53 \times 10^3/\mu L$). Prior marrow biopsy demonstrated marrow necrosis, precluding definitive diagnosis. Scattered throughout the necrotic milieu were numerous amber filamentous structures whose pigment was maintained through a range of histochemical stains, such as hematoxylin and eosin, Prussian blue, Gram, and trichrome. Panel A shows a scanning hematoxylin and eosin slide with hematoidin pigment in the marrow space. Panels B-D show details showing the necrotic bone marrow space and magnified views of the hematoidin crystal. Follow-up enteroscopy and biopsy revealed a primary intestinal adenocarcinoma.

Hematoidin has a golden-brown crystalline pigmentation and is composed of thread-like filaments arranged in star-shaped clusters akin to a Medusa's head. Hematoidin forms when erythrocyte extravasation occurs in a closed tissue compartment and is a result of hemoglobin metabolism under low oxygen tension conditions. Following erythrocyte degeneration, porphyrin is released from hemoglobin and is converted to biliverdin, which is reduced to crystalline hematoidin. Because hematoidin can be converted back to biliverdin, it is not always seen. This may explain its rarity. Recognizing hematoidin and its morphologic features can circumvent unnecessary analysis.