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# Myeloid Sarcoma: solidification of liquid cells.

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## **Cover Page Footnote**

Aknowledgments: This publication is the result of work supported with resources and the use of facilities at the James H. Quillen Veterans Affairs Medical Center. The contents in this publication do not represent the views of the Department of Veterans Affairs or the United States Government.

## **Myeloid Sarcoma: solidification of liquid cells**

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### **INTRODUCTION**

Myeloid sarcoma (MS) is a solid tumor of immature myeloid cells occurring in an extra-medullary site<sup>2</sup>. MS can occur in de novo, as the initial manifestation or concurrently with acute, chronic myeloid leukemia (3-8%) and less frequently with other types of myeloproliferative disorders or MDS. The majority of the cases of MS involve the skin, lymph nodes, bone, or gastrointestinal tract<sup>4</sup>. MS can, however, occur at virtually any extra-medullary site. We are presenting a case of myeloid sarcoma of the neck in a patient with a history of essential thrombocythemia that later transformed into AML.

### **CASE DESCRIPTION**

A 67-year-old male with a history of essential thrombocytosis on hydroxyurea presented to primary care physician with a four-week history of fever, night sweats, and a progressively enlarging dime size mass on right side of his neck. The patient underwent CT scan of the neck which showed multiple significantly enlarged lymph nodes measuring up to 1.6 x 2 cm and a large necrotic mass in the posterior right paravertebral region measuring about 2 x 2.2 x 3.9 cm extending from the C4-C7 region (Figure 1/2). The patient underwent neck biopsy of the mass which showed, tumor cells that were positive for CD34, myeloperoxidase, and CD61 but negative for CD56 and BCL6 (Figure 3/4). The past medical history of the patient plus the characteristic findings were compatible with myeloid sarcoma.

### **DISCUSSION**

Myeloid sarcomas (MS) were first described by Burns in 1811 and was named "chloroma" by King in 1853 due to its green appearance as seen on gross examination of the freshly cut tumor. This was later attributed to the high myeloperoxidase content of the tumor and therefore, the term "granulocytic sarcoma" <sup>1</sup> was used by Rappaport.

Immunophenotyping has shown that MS may have features of any myeloid lineage, including multiple lineage expression within the same tumor.

There is a great challenge associated with a diagnosis of MS as the differential diagnosis is broad and is commonly influenced by patient's age and history of a possible antecedent or concurrent myeloid neoplasm. Myeloid sarcoma is often initially misdiagnosed as non-Hodgkin lymphoma however the addition of B-cell lineage markers to the immuno-histochemical panel is valuable as an expression of CD20 or CD79a by myeloid sarcomas is unlikely. Distinction from a mature T-cell lymphoma is a more challenging process when considering the frequent expression of CD43 and CD45 in both entities. Furthermore, it is not uncommon for both myeloid sarcomas and T-cell lymphomas to have increased eosinophils within the background inflammatory infiltrate.<sup>2</sup>

In summary, a thorough panel is necessary to diagnose myeloid sarcoma accurately. A diagnostic panel must include anti-CD43 or anti-lysozyme as a lack of immunoreactivity for either of these markers would be inconsistent with a diagnosis of myeloid sarcoma.

Expression of CD33, myeloperoxidase, CD34, and CD117 are also recommended for myeloid antigens to interrogate, as they will not only typically define the lesion as myeloid in origin but also exclude the major entities in the differential diagnosis.<sup>3</sup>

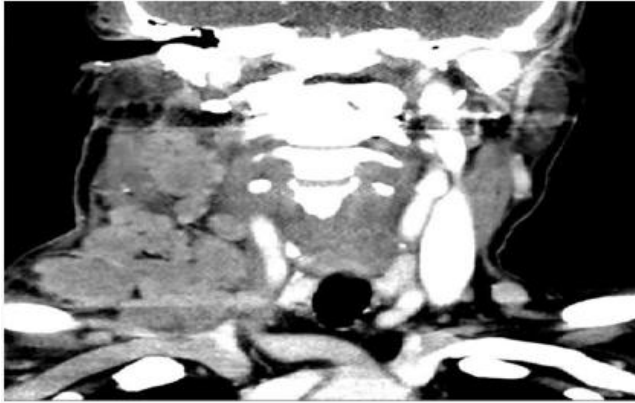


Figure 1: CT scan of the Neck showing large necrotic mass in right paravertebral region.

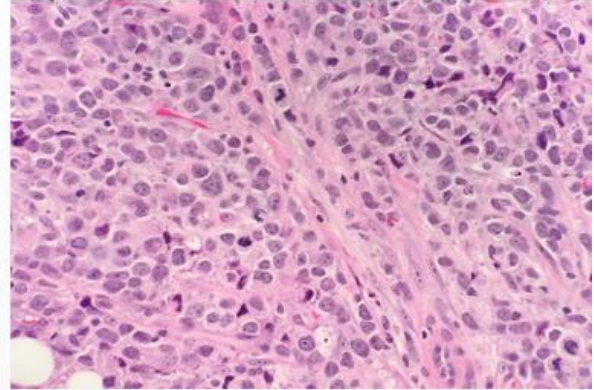


Figure 2: Immature tumor cells with dispersed chromatin and prominent nucleoli. Multiple mitotic figures are identified through the tumor.

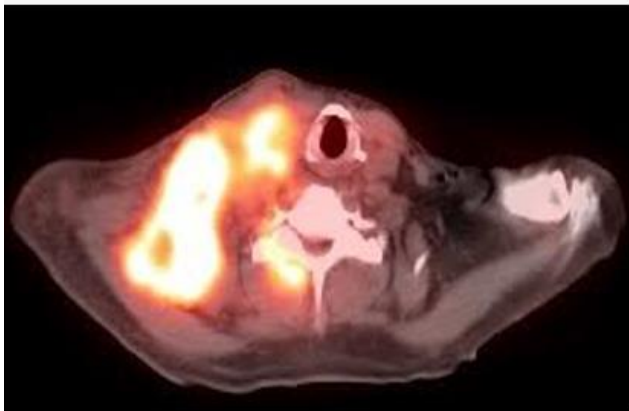


Figure 3: PET scan showing enlarged lymph nodes with high metabolic activity.

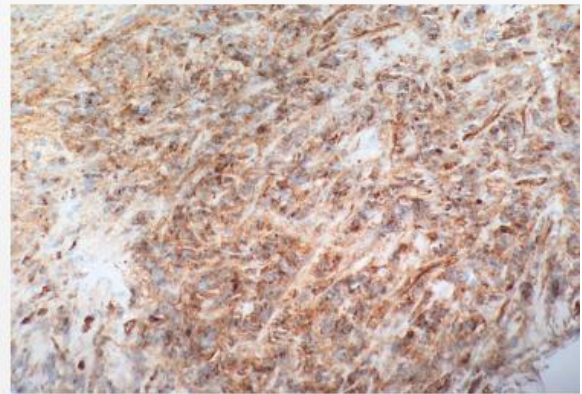


Figure 4: LM view showing strong staining with immunohistochemical stain CD34.

#### ACKNOWLEDGEMENT

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