

# A Case of Generalised Cutaneous Granulocytic Sarcoma in an Elderly Patient with Myelodysplastic Syndrome

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## ABSTRACT

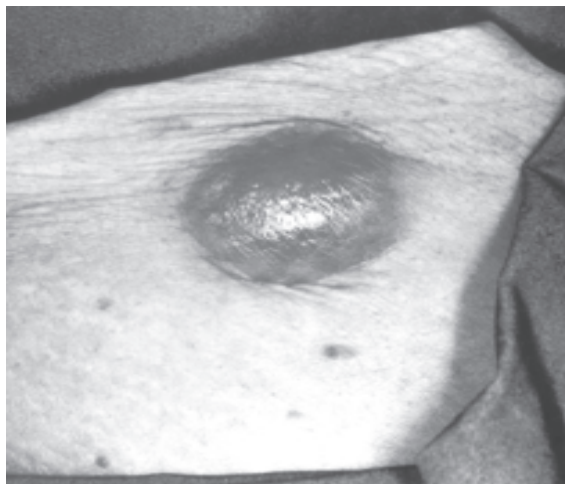
Granulocytic sarcoma is a rare extramedullary malignant mass composed of primitive cells of the granulocytic lineage. It can arise from any part of the body and is frequently associated with haematological diseases, commonly acute myeloid leukaemia. Rarely, it has been found in conjunction with myelodysplastic syndrome. We report a case of cutaneous granulocytic sarcoma in a 73-year-old lady. The patient presented with a two-month history of multiple skin nodules which were confirmed by skin biopsy to be granulocytic sarcoma. Bone marrow examination was consistent with myelodysplastic syndrome. Localised radiotherapy to the skin lesions were given. She died from septicaemia six months after presentation. The management of this condition presents a diagnostic and therapeutic dilemma for both the pathologist and physician. In cases which are poorly differentiated as in this case, histological diagnosis is particularly difficult. Its definitive diagnosis would then require the additional use of a broad panel of immunohistochemical and cytochemical stains.

**Keywords:** Extramedullary myeloid tumour, Myelodysplasia, Preleukaemia

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## INTRODUCTION

Granulocytic sarcoma (GS) was first described by Burns in 1811. Although initially coined "Chloroma" by King in 1853 because of its characteristic green hue due to the presence of granulocyte myeloperoxidase, it often has no distinct colour. The preferred term "granulocytic sarcoma" was named by Rappaport in 1966 and has been widely adopted since. Recently in 1988, Davey has proposed the encompassing term 'extramedullary myeloid tumour' which includes nonmedullary extramedullary leukaemic infiltrates<sup>(1)</sup>. GS is a rare disease and its incidence is unknown. It occurs more commonly in children and young



**Fig. 1** Photo showing GS as an erythematous nodular mass in the right groin.

adults and there is a slight preponderance in males<sup>(2)</sup>. However, patients with GS in association with MDS are likely to be older.

We present an elderly patient with multiple cutaneous granulocytic sarcomata who was found to have myelodysplastic syndrome (MDS).

## CASE REPORT

The patient is a 73-year-old Chinese female who presented with multiple dermal and subcutaneous nodules on the left chest wall, right groin (Fig. 1) and lower back over the preceding two months. Apart from weight loss she had no other systemic symptoms. The skin nodules were erythematous, nontender, and measuring 15-20 mm in diameter. The lesions were firm, smooth in surface with no epidermal change. The other significant physical findings were hepatosplenomegaly.

The blood count at presentation was: haemoglobin of 7.4 g/dL, white cell count of  $14.1 \times 10^9/L$ , with 4% blasts, 23% myelocytes and 5% metamyelocytes, and platelet of  $685 \times 10^9/L$ . The peripheral blood smear was abnormal with macrocytic red blood cells, polychromasia and occasional nucleated red blood cells. There was hypogranulation and hypersegmentation of polymorphonuclear leucocytes

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with chromatin condensation (Pelger-Huet-like anomaly) and large platelets were also observed. The bone marrow aspirate was haemodiluted. The trephine biopsy was hypocellular with cytological evidence of dysplasia in erythroid precursors and megakaryocytes, and occasional blasts seen. Karyotyping of the bone marrow showed clonal abnormalities comprising of hyperdiploidy with derivative chromosome 7 and also deleted chromosome 13.

Excision biopsy of a nodule showed a dense infiltrate in the dermis, more cellular in the deeper part, consisting of a monomorphous population of primitive cells as cords and sheets separating collagen bundles and around nerves and skin appendages where myxoid change was seen. The tumour cells have round vesicular nuclei with prominent nucleoli, and cytoplasm is abundant with granular or foamy appearance. Eosinophil precursors or lymphocytes were not seen. Leder esterase was negative. Immunohistochemistry for myeloperoxidase and CD43 showed positive reactivity within the tumour cells. These features were consistent with GS.

She developed a mild left hemiparesis and magnetic resonance imaging brain scan showed a small enhancing hypercellular intraventricular lesion at the right foramen of Monro causing an obstructive hydrocephalus. A ventriculoperitoneal shunt was inserted and cerebrospinal fluid analysis showed the presence of a few leukaemic blasts. She developed bilateral acute subdural haematoma following a fall which were drained via a burr hole. As her general condition was poor, she was not given chemotherapy. However, as the cutaneous nodules were growing in size and number over the trunk, back, and also involved the scalp and eyelids, radiation treatment was given to some of the bigger skin nodules and her cranium. Her general health deteriorated rapidly and the skin lesions failed to respond to radiotherapy. She finally succumbed to complicating septicaemia six months after diagnosis. The last blood count one month prior to her death was: haemoglobin of 6 g/dl, white cell count of  $7.3 \times 10^9/L$ , with 3% blasts, and platelet of  $450 \times 10^9/L$ .

#### DISCUSSION AND CONCLUSION

GS can be found in any part of the body but the most common sites are bone, soft tissue, skin, CNS and lymph nodes<sup>(2,3)</sup>. Skin is the most common manifestation in the setting of MDS<sup>(4)</sup>. Likewise, this patient first presented with cutaneous lesions. Cutaneous GS is a type of "leukaemia cutis" which defines the infiltration of leukaemia cells in the skin in contrast with the term "leukaemids" which describes non-specific cutaneous manifestations of leukaemia.

On the skin, GS usually appears as a rapidly growing, firm, papulonodular lesion. It can be solitary, multiple or disseminated<sup>(5)</sup>. It is most commonly found on the scalp, trunk and face<sup>(2)</sup>.

Histologically, GS frequently presents as a diagnostic dilemma. Under the light microscopy, it is morphologically characterised by the presence of eosinophilic myelocytes in well-differentiated stage. However, in most cases it occurs in various stages of differentiation and it is not easily recognised and frequently misinterpreted as lymphoma<sup>(2,6)</sup>. Especially when the histology shows poorly differentiated cells and in cases without a history of haematological disorder. Thus, the use of a broad panel of tests involving immunohistochemical (e.g. immunostain for myeloperoxidase, lysozyme, CD43) and cytochemical studies (e.g. Leder stain for naphthol-ASD-chloroacetate-esterase) are important for the diagnosis of GS<sup>(1,7)</sup>. In this patient, the tumour cells were poorly differentiated and Leder esterase negative, but positive for myeloperoxidase and CD43 on immunohistochemistry. In GS, CD43 has been reported to have a sensitivity of 93% but its specificity is only 36%<sup>(8)</sup>. It is often considered a marker for T lymphocytes but it also labels B cell subset, granulocytes, and some monocytes and macrophages.

GS is most commonly associated and usually presents concurrently with acute myeloid leukaemia (AML). However, it can be a sign of impending and relapsing AML or even develop after the onset of AML<sup>(2)</sup>. When associated with myeloproliferative diseases or myelodysplastic syndrome, it can be a sign of blast transformation<sup>(2,6)</sup>. The presence of complex chromosomal anomalies is considered a poor prognostic karyotypic marker in MDS<sup>(4)</sup>. This and the presentation of granulocytic sarcoma in this patient was predictive of a bad prognosis.

Therapeutic options for GS are chemotherapy, radiation and surgery. Radiation therapy is palliative and suited for patients with localised or diffused disease while surgery is limited to situations where there is tumour compression. Most GS respond to external beam radiation but relapse occurs subsequently and development of leukaemia is not averted<sup>(9)</sup>. In our patient, the skin lesions did not regress with radiotherapy. Chemotherapy has been found to prolong life and may prevent the development or relapse of leukaemia in cases of isolated GS and GS associated with leukaemia<sup>(3)</sup>. However, patients with MDS have poor outcomes from transformation to leukaemia<sup>(2,4)</sup>. Early recognition and a definitive diagnosis of GS is therefore important. In younger patients early institution of chemotherapy and allogeneic bone marrow transplant should be considered.

**REFERENCES**

1. Davey FR, Olson S, Kurec AS, Eastman-Abaya R, Gottlieb AJ, Mason DY. The immunophenotyping of extramedullary myeloid cell tumors in paraffin-embedded tissue sections. *Am J Surg Pathol* 1988; 12:699-707.
2. Neiman RS, Barcos M, Berard C, Bonner H, Mann R, Rydell RE, Bennett JM. Granulocytic sarcoma: A clinicopathologic study of 61 biopsied cases. *Cancer* 1981; 48:1426-37.
3. Byrd JC, Edenfield WJ, Shields DJ, Dawson NA. Extramedullary myeloid cell tumors in acute nonlymphocytic leukaemia: A clinical review. *J Clin Oncol* 1995; 13:1800-16.
4. List AF, Ganzalez-Osete G, Kummert T, Doll DC. Granulocytic sarcoma in myelodysplastic syndromes: clinical marker of disease acceleration. *Am J Med* 1991; 90(2):274-6.
5. Lin CK, Liang R, Ma L, et al. Myelodysplastic syndrome presenting with generalised cutaneous granulocytic sarcomas. *Acta Haematologica* 1990; 83:89-93.
6. Meis JM, Butler JJ, Osborne BM, Manning JT. Granulocytic sarcoma in non-leukemic patients. *Cancer* 1986; 58:2697-709.
7. Menasce LP, Banerjee SS, Beckett E, Harris M. Extra-medullary myeloid tumour (granulocytic sarcoma) is often misdiagnosed: A study of 26 cases. *Histopathology* 1999; 34:391-8.
8. Ritter JH, Goldstein NS, Argonyi Z, Wick MR. Granulocytic sarcoma: An immunohistologic comparison with peripheral T-cell lymphoma in paraffin sections. *Journal of Cutaneous Pathology* 1994; 21(3):207-16.
9. Chak LY, Sapozink MD, Cox RS. Extramedullary lesions in nonlymphocytic leukaemia: results of radiation therapy. *Int J Radiat Oncol Biol Phys* 1983; 9:1173-6.