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CASE REPORT

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Chronic myelogenous leukemia presenting with Morel Lavallée lesion: A case report of a rare presentation

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Abstract

Chronic myelogenous leukemia is a myeloproliferative neoplasm characterized by the BCR-ABL1 fusion gene and the development of the Philadelphia chromosome, which leads to an increase in granulocytes and bone marrow myeloid precursors in the blood, it can lead to many possible complications depending on the disease stage at the time of diagnosis. The Morel-Lavallée lesion (MLL) is a closed traumatic soft-tissue degloving injury, that results from the separation of the hypodermis from the underlying fascia, with resultant hemo-lymphatic fluid collection between the tissue layers. We report a case of a 48-year-old male patient, with no chronic illnesses, who presented with 2 weeks history of posterior chest wall pain and swelling. Initial investigation showed a white blood cell count of 364.4 $\times 10^3/\mu l$. Bone marrow pathology report findings were consistent with chronic myeloid leukemia (CML), and the BCR-ABL test came positive. CT chest with contrast showed a large chest wall lesion, suggestive of a Morel-Lavallee lesion. Ultrasound-guided aspiration of the lesion yielded 20 mm of fluid from the thick hematoma. Histopathology of the fluid showed Necrotic debris with mixed inflammation. Patient's condition improved, and he was discharged on Dasatinib with follow-up in hematology and surgery clinics.

KEYWORDS

chronic myelogenous leukemia, hematoma, leukemia, Morel-Lavallée

1 | INTRODUCTION

Chronic myelogenous leukemia (CML) is a myeloproliferative disorder characterized by increased proliferation of the granulocytic cell line within the bone marrow without losing cells' capacity to differentiate, which is reflected by the increased number of granulocytes and their immature precursor in the peripheral blood.[1] The clinical presentation of CML varies, up to 40% of the patients are asymptomatic at presentation. symptomatic patients can present with different complaints such as fatigue, malaise, weight loss, excessive sweating, abdominal fullness, and bleeding episodes due to platelet dysfunction.[2] On a few rare occasions, CML can present initially with soft tissue hematoma, this can be managed by treatment with tyrosine kinase inhibitors as well as conservative measures.[3]

The Morel-Lavallée lesion (MLL) is a closed soft-tissue degloving injury that results in hemo-lymphatic fluid collection between the tissue layers.[4] We report a case of a 48-year-old man, who presented with a Morel-Lavallée lesion in the posterior chest wall. The patient was found to have CML in the chronic phase. The Morel-Lavallée lesion was treated conservatively, and the patient was started on a tyrosine kinase inhibitor.

2 | CASE PRESENTATION

A 48-year-old man with no known chronic illness presented to the emergency department with pain and swelling in the back of his chest for 15 days. The patient denied trauma or heavy lifting. There was no fever, shortness of breath, chest pain, abdominal pain, nausea, vomiting, or change in bowel habits. There was no history of, headaches, dizziness, change in vision, or night sweats. the patient mentioned that he had a weight loss of 7 kg over a few months. Clinical examination was significant for a small cervical lymph node, massive splenomegaly reaching up to the midline, and a large mass in the left interscapular area measuring 13 × 10 cm (Figure 1). Labs upon presentation (Table 1) showed significant leukocytosis, anemia, and normal platelets count. peripheral Smear was suggestive of myeloproliferative neoplasm, best fitting with CML. The patient was admitted to the hospital as a case of CML to rule out the extramedullary blast phase. He was started on Intravenous hydration, allopurinol, hydroxyurea, and supportive blood transfusions. The patient underwent a bone marrow biopsy, and the pathology results were most consistent with CML with a positive BCR-ABL1 test. Ultrasound abdomen showed Moderate hepatosplenomegaly. Ultrasound of the chest wall mass showed Sonographic findings of a large left infra-scapular mass lesion suggestive of elastofibroma dorsi, however, due to the patient's presentation, further evaluation by contrast-enhanced chest CT was recommended. A Pan CT scan was done which demonstrated a large chest wall lesion, suggestive of a Morel-Lavallee lesion (Figure 2A,B). The possibility of chest wall neoplasm was still there. The patient underwent a biopsy of the chest wall mass via interventional radiology to rule out myeloid sarcoma. Approximately 20 ml of thick hematoma was aspirated. Histopathology showed Necrotic debris and mixed inflammation. The patient's condition improved, and he was discharged home on Dasatinib 100 mg of daily. Upon discharge, laboratories showed improvement in WBC count to 20.6 $\times 10^3$/μl, Hb of 7.7 gm/dl, and platelets 568 $\times 10^3$/μl. In the first follow-up 2 weeks after discharge, the patient mentioned significant improvement in his pain and mass size.

TABLE 1 Lab results on admission

Parameters	Patient's values	Normal range
White blood cells (WBCs)	364.4 $\times 10^3$/μl	4–11 $\times 10^3$/μl
Hemoglobin	6.0 gm/dl	14–18 gm/dl
Platelets	407 $\times 10^3$/μl	150–450 $\times 10^3$/μl

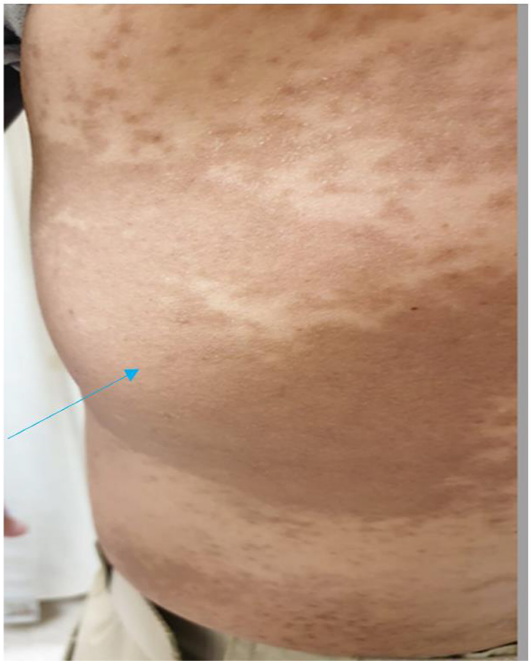

FIGURE 1 Large chest wall swelling, the skin rash developed after starting Dasatinib.

3 | DISCUSSION

Chronic myeloid leukemia (CML) is defined by the WHO as a myeloproliferative neoplasm characterized by the chromosomal translocation t (9;22) (q34.1;q11.2).[5] The translocation results in the BCR-ABL1 fusion gene and the development of the Philadelphia chromosome, which leads to an increase in granulocytes and bone marrow myeloid precursors in the blood. Due to the variant forms of the Philadelphia chromosome and cytogenetic abnormalities which can affect the disease pathobiology, interphase fluorescence in situ hybridization (FISH), chromosome banding analysis, and polymerase chain reaction (PCR) are utilized in the diagnosis and follow-up of CML.[5] Three main clinical phases of CML exist; The chronic phase (which is usually the initial phase). The Disease can then progress into the accelerated phase (AP) and the blastic phase (BP). The patient is in the accelerated phase when 10%–19% of blasts are present in the bone marrow or

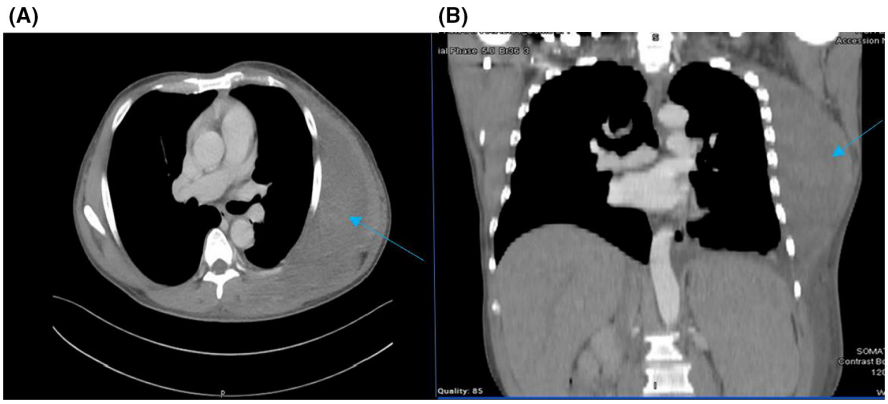

FIGURE 2 Large chest wall lesion, suggestive of Morel-Lavallée lesion.

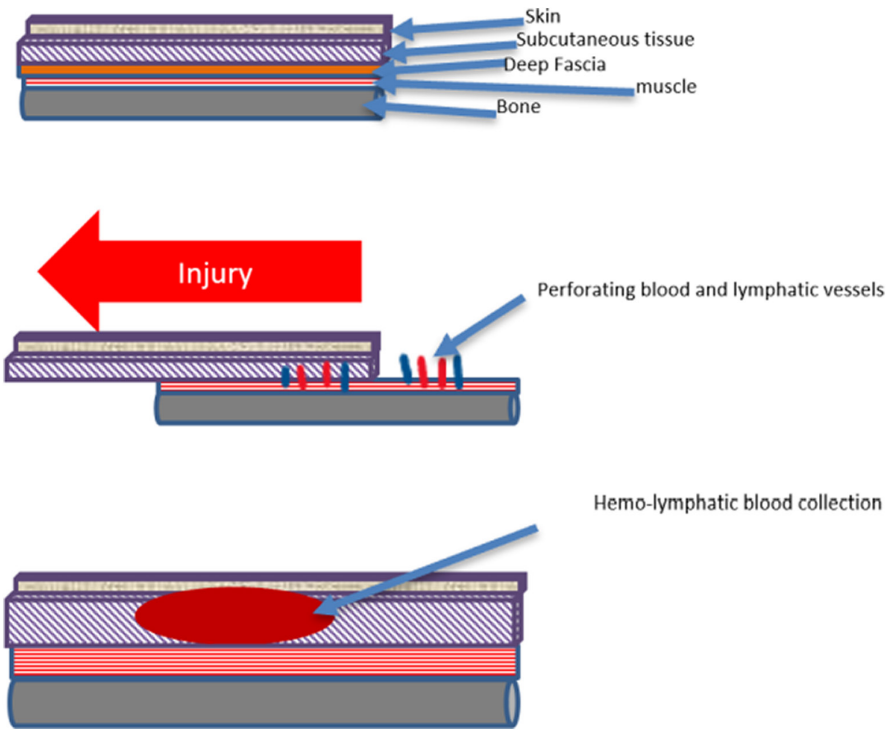

FIGURE 3 Morel-Lavallée lesion

peripheral blood. While the blastic phase is diagnosed when more than 20% of blasts are identified either in the blood, in the bone marrow, or at extramedullary sites.[1]

The clinical presentation of CML varies and depends on the stage of disease at presentation. Almost 40% of patients are asymptomatic.[1] Symptomatic patients usually complain of fatigue, malaise, weight loss, excessive sweating, abdominal fullness, and occasionally bleeding episodes. Other symptoms include early satiety (caused by splenomegaly or splenic infarction). expanding bone marrow can lead to bone and sternal pain and tenderness, and some patients might experience acute gouty arthritis. objective findings on presentation might include splenomegaly, anemia, significant leukocytosis, and platelet count above 600,000–700,000/μl.[2] Patients with blast crises can present with the Involvement of extramedullary tissues such as the lymph nodes, skin, and soft tissues.[1] In very rare cases, CML can present initially with soft tissue hematoma. the soft tissue hematoma can be explained by platelet dysfunction, acquired Von Willebrand disease, or acquired Glanzmann's thrombasthenia. Platelet dysfunction in CML can be attributed to the clonal expansion of dysfunctional megakaryocytes, which explains the expected improvement in platelet function after starting tyrosine kinase inhibitors. Expectant management, as well as treatment with tyrosine kinase inhibitors, can resolve the hematomas, as demonstrated in previously reported cases.[6–8]

The Morel-Lavallée lesion (MLL) is a closed traumatic soft-tissue degloving injury. The French physician, Dr. Victor-Auguste-François Morel-Lavallée, was the first to describe the lesion in the year 1863. The injury results from the separation of the hypodermis from the underlying fascia, and commonly occurs when a shearing force is applied to the soft tissue. This disrupts the perforating blood and lymphatic vessels of the soft tissue, resulting in

a characteristic hemo-lymphatic fluid collection between the tissue layers (Figure 3).[4] The most common site for the Morel-Lavallée lesion is around the subcutaneous tissues adjacent to the greater trochanter.[4] We were able to find only one case report in which a Morel-Lavallée lesion was the presenting symptom in a patient with CML. the patient was a 16-year-old (Adolescent Athlete), who presented with a lesion of the knee, which was proved later to be a Morel-Lavallée lesion.[9] After investigations, he was found to have chronic myelogenous leukemia. The patient was managed initially conservatively; however, he presented 1 month later with worsening symptoms after being involved in competitive sports. Therefore, the lesion was managed surgically and the patient was started on Dasatinib, with improvement in his condition in further follow-up.[9] Our case is the second reported case with CML presenting as a Morel-Lavallée lesion affecting the posterior chest wall, which is an unusual site for this lesion. The lesion was managed conservatively and resolved completely. In the literature review, there are a few cases of CML presenting with hematomas at different sites, including the thigh, chest wall, and mediastinum,[3,10,11] In these cases, the bleeding was attributed to platelet dysfunction, acquired Glanzmann's thrombasthenia, acquired Von Willebrand deficiency, or no reason.[6–8] It is not clear why this patient developed such hematoma with no history of trauma, and in an unusual site like the chest wall, but spontaneous hematoma due to platelets dysfunction is a possible etiology in this case.

4 | CONCLUSION

Chronic myelogenous leukemia can present with soft tissue hematoma, even in the absence of trauma. It is important to keep in mind hematological malignancies as a possible cause of unexplained bleeding and soft tissue hematoma. Though soft tissue hematomas in CML patients are mostly attributed to platelet dysfunction, acquired Von Willebrand disease, and acquired Glanzmann's thrombasthenia, the reason for the development of the Morel-Lavallée lesion is yet to be discovered, especially in the absence of trauma or other inciting events. Conservative treatment, including tyrosine kinase inhibitors, may be considered sufficient to resolve the hematomas and control the CML.

AUTHOR CONTRIBUTIONS

Sara S. I. Mohamed: Writing – original draft. **Hana Mahmoud Qasim:** Writing – review and editing. **Ahmed Mahfouz:** Writing – original draft. **Maab A. Osman:** Writing – original draft. **Ashraf O. E. Ahmed:** Writing – original draft. **Safa H. Al-Azewi:** Supervision. **Mohamad A. Yassin:** Supervision. **Shehab Fareed:** Writing – review and editing.

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CONFLICT OF INTEREST

All authors of this manuscript have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author.

ETHICAL APPROVAL

None.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with journal's patient consent policy.

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