

## Ecchymosis: A Subtle Sign Unmasking Malignancy

Sir,  
Ecchymosis is defined as purpura with a size of more than 1 cm and occurs due to extravasation of blood into the subcutaneous tissue, leading to discoloration of the skin.<sup>[1]</sup> It is classified as one of the subtypes of purpuric lesions alongside petechiae, macular purpura, palpable purpura, noninflammatory, and inflammatory retiform purpura.<sup>[2]</sup> Ecchymosis may occur due to blunt trauma or be physiological as in obese individuals. Pathological states predisposing to the development of ecchymosis include disorders of coagulation pathways and platelets in addition to disorders of dermal connective tissues.<sup>[3]</sup> These disorders mostly present as purpura but may present as ecchymosis in the setting of trauma or minor injury. The occurrence of ecchymosis without trauma or any known predisposition in adults should be investigated as it may be a subtle clue to an underlying malignancy. We report two cases of apparently healthy adults where ecchymosis was the only presenting sign of the hematologic malignancy without any obvious systemic symptoms and signs.

### Case Report 1

A 28-year-old male presented with ecchymosis over the right arm for 7–8 days. The patient denied any history of epistaxis or bleeding from natural orifices, hemarthroses, trauma, or surgery. The patient was non-alcoholic, and there was no past history of liver or kidney disease, recent illnesses, drug intake, or infections. There was no family history of bleeding disorders. The patient denied any history of fever, night sweats, or weight loss. On examination, ill-defined dusky red to violaceous patch of size 9 × 6 cm was present over the right arm [Figure 1]. Abdominal examination revealed

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splenomegaly. There was no evidence of mucocutaneous bleeding or tenderness and swelling in joints. Prothrombin time (PT) and partial thromboplastin time (PTT) were within normal limits. Complete blood count showed increased white blood cells (1.82 lac/mm<sup>3</sup>) and normal platelets (1.67 lac/mm<sup>3</sup>). The peripheral blood smear revealed myeloblasts (1%), promyelocytes (4%), myelocytes (12%), and metamyelocytes (7%) [Figure 2]. The serum *lactate dehydrogenase* (LDH) was within the normal range. Bone marrow analysis after aspiration and biopsy revealed a hypercellular marrow, with expansion of the myeloid cell line (neutrophils, eosinophils, basophils) and blast cells [Figures 3 and 4]. There was a prominence of megakaryocytes. Based on history, examination, and investigations, the patient was diagnosed as a case of chronic myeloid leukemia (chronic phase) and was subsequently referred to a hemato-oncologist for further management.

### Case Report 2

A 43-year-old, non-alcoholic male presented with multiple ecchymotic patches over arms, lower lateral abdomen, knees, and legs for 5 days [Figure 5]. He had been having these lesions, on and off, since the past 6 months with spontaneous resolution. The patient denied having any history of bleeding from natural orifices or a family history of bleeding disorders and was not on any medication. The patient did not have any grade B symptoms. There was no hepatosplenomegaly or lymphadenopathy. Complete blood count showed leucocytosis (1.30 lac/mm<sup>3</sup>) and decreased platelets (71,000/mm<sup>3</sup>). The peripheral blood smear revealed pro-myelocytes (2%), myelocytes (30%), and metamyelocytes (20%). The

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Figure 1: Ill-defined dusky red to violaceous patch over the right arm in a 28-year-old young male

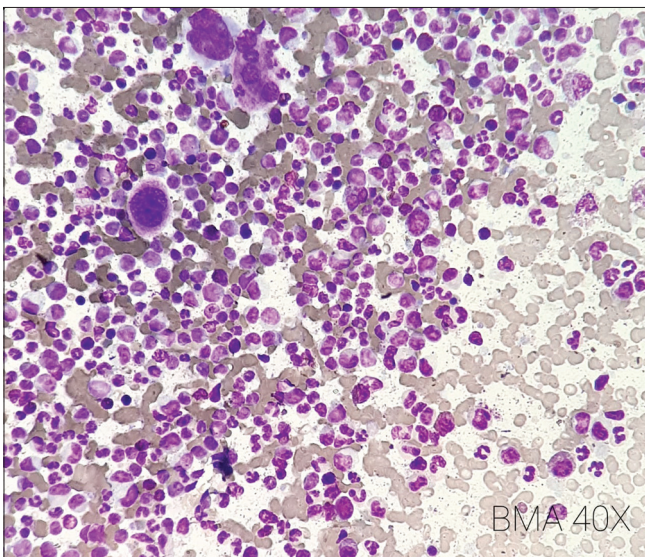


Figure 3: Bone marrow aspirate (BMA) showing markedly increased granulocytes with significant expansion of myelocytes without definite morphologic dysplasia and relative erythroid hypoplasia with progressive maturation without dysplasia. Megakaryocytes are mildly increased and are small and hyposegmented. Blasts constitute <5% of nucleated cells (40x)

patient was diagnosed as a case of chronic myeloid leukemia and referred to a hemato-oncologist for further management.

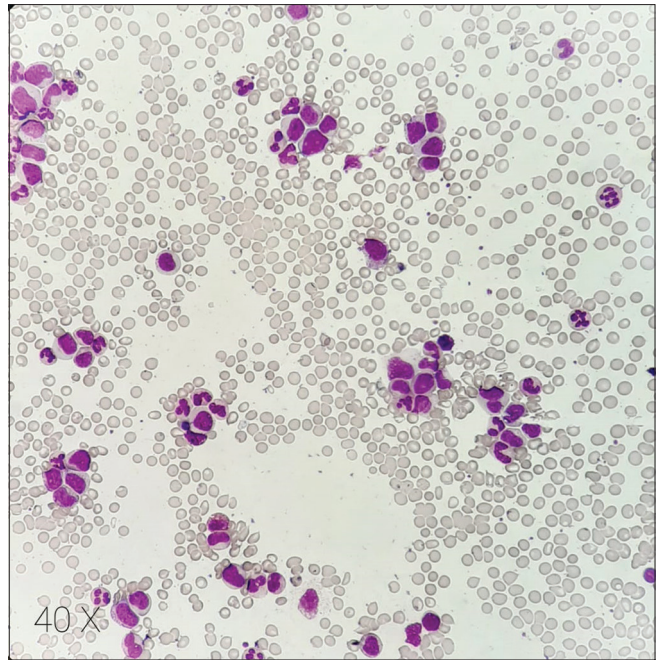


Figure 2: Peripheral blood smear demonstrating myeloblasts, pro-myelocytes, myelocytes, and metamyelocytes (40x)

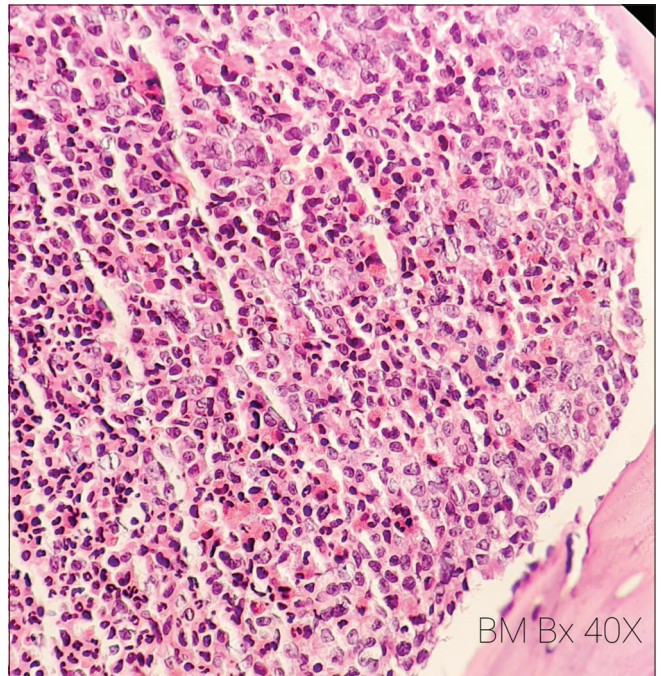


Figure 4: Bone marrow core needle biopsy from left posterior iliac crest demonstrating a hypercellular (90%) bone marrow with absolute myeloid hyperplasia and <5% blasts. There is trilineage maturation with absolute myeloid hyperplasia and relative erythroid hypoplasia with a mild to moderate increase in megakaryocytes (40x)

## Discussion

Isolated ecchymosis (or few lesions) can occur due to trauma (physical abuse, mechanical injury), inherited syndromes (von Willebrand disease, Ehlers-Danlos syndrome, hemophilia A or B), malignancy, chronic liver or kidney disease, vitamin C or vitamin K deficiency,

psychologic disorders (Gardner–Diamond syndrome), drugs [Nonsteroidal anti-inflammatory drugs (NSAIDs), anticoagulants], or can be physiologic (senile purpura).<sup>[3]</sup> Cullen’s sign (periumbilical ecchymosis) and Grey Turner’s sign (ecchymosis of the lateral abdominal wall or the flanks) are cutaneous manifestations of intra-abdominal bleeding, most commonly seen in acute pancreatitis.<sup>[4]</sup>

Cutaneous manifestations of leukemia can have varied clinical presentations, which can be divided into specific and nonspecific, based on whether they occurs directly due to the disease process or an immune-mediated/paraneoplastic phenomenon, respectively [Table 1].<sup>[5]</sup> Some specific manifestations, like leukemia cutis, which occur due to leukemic infiltration of the skin, predict blast transformation and progression to acute myeloid leukemia (AML) in chronic myeloid leukemia (CML) and myelodysplastic syndrome, respectively.<sup>[5]</sup> Ecchymosis in leukemia occurs due to thrombocytopenia or platelet dysfunction and presents in the skin or mucosa immediately after an injury or trauma as opposed to coagulation disorders that present with delayed and recurrent deep tissue or joint bleeding.<sup>[6]</sup> Thrombocytopenia in leukemia can occur due to decreased platelet production as a result of bone marrow infiltration,



**Figure 5: Macular ecchymosis over the right lateral abdomen in a 43-year-old male**

genetic polymorphism and mutation, chemotherapy, or increased destruction due to hypersplenism and/or immune-mediated damage.<sup>[7]</sup> Platelet dysfunction in leukemia occurs due to acquired Glanzmann’s thrombasthenia (GT) which is characterized by normal platelet count and decreased platelet aggregation due to the presence of autoantibodies against GPIIb/IIIa complex. Patients with acquired GT have a normal coagulation profile and maybe negative for autoantibodies against GPIIb/IIIa, thus requiring platelet aggregation studies to further assess platelet dysfunction.<sup>[8]</sup> Acquired GT appears to be the most probable explanation for ecchymosis in case 1 as the patient had normal platelet count and coagulation profile, although platelet aggregation studies and ELISA for anti-GPIIb/IIIa autoantibodies could not be done due to resource constraints. Bone marrow infiltration leading to thrombocytopenia explains the occurrence of ecchymosis in case 2. Ecchymosis in an adult, without any preceding history of trauma or bleeding disorder, should be investigated, as it can help in early diagnosis and effective management of CML with tyrosine kinase inhibitors, which potentially improves the survival of these patients.<sup>[9]</sup> This case serves to highlight the importance of peripheral smear examination in cases of ecchymosis/purpura in apparently healthy adults, that led to early diagnosis and treatment. As the latent period from onset of disease to the manifestation of systemic symptoms is delayed and variable in CML, these patients generally present to dermatologists, rather than hematologists or hemato-oncologists. Hence, dermatologists should be alert to the possibility of underlying hematologic malignancy, and a peripheral blood examination should be ordered to rule out this rare and potentially curable hematologic malignancy.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the forms, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Table 1: Cutaneous manifestations of leukemias**

Specific	Cutaneous Manifestations of Leukemias							
	Non-specific							
	Neutrophilic dermatoses	Reactive erythemas	Vasculitis	Vasculopathy	Panniculitis	Inflammatory dermatosis	Granulomatous reactions	Miscellaneous
Leukemia cutis	Sweet syndrome	Exaggerated arthropod reactions	Polyarteritis nodosa	Acral ischemia with lividity	Erythema nodosum	Urticaria	Interstitial granulomatous dermatitis	Gingival hyperplasia
Granulocytic sarcomas	Pyoderma gangrenosum	Erythroderma	Vasculitis (small vessel/ leukocytoclastic)	Perniosis	Other panniculitides	Paraneoplastic pemphigus	Sarcoid-like	Ecchymosis
	Neutrophilic eccrine hidradenitis	Facial erythema and edema	Erythema elevatum diutinum			Recalcitrant adult-onset eczema	Granuloma annulare like	

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### **Conflicts of interest**

There are no conflicts of interest.

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