

Pathologist's Feast: Intranuclear Inclusions in Myeloma Patient

Sir,

We present a case of a 36-year-old female admitted in hospital with complaints of pain in sacral region radiating toward right lower limb for 1 month. Laboratory examination revealed hemoglobin 8.1 g/dL, red blood cell count – $2.61 \times 10^9/\text{mm}^3$, white blood cell count $16.16 \times 10^3/\text{mm}^3$, and platelet count $299 \times 10^9/\text{mm}^3$. The differential showed polymorphs – 74%, lymphocytes – 22%, eosinophils – 1%, and monocytes – 3%. Peripheral blood smear showed rouleaux formation in red blood cells. The serum biochemistry showed blood urea – 54 mg/dl and creatinine – 3.8 mg/dl, angiotensin converting enzyme level – 64.25 U/L, and serum calcium – 13.3 mg/dl. Liver function tests and serum electrolytes were normal and HIV and HBsAg were nonreactive. Urine examination was negative for Bence Jones protein. Serum total protein was 10.5 mg/dl with reversed albumin globulin ratio 0.61. On serum electrophoresis, there was presence of monoclonal (M) band in beta-2 regions [Figure 1]. X-ray skull was showing multiple punched-out lesion. USG findings were chronic cervicitis, uterine fibroid, and cholelithiasis. Bone marrow aspiration showed 70% of plasma cell having nucleocytoplasmic asynchrony, marked pleomorphism, and multinuclearity. There were bi- and tri-nucleated plasma cells also noted in the bone marrow

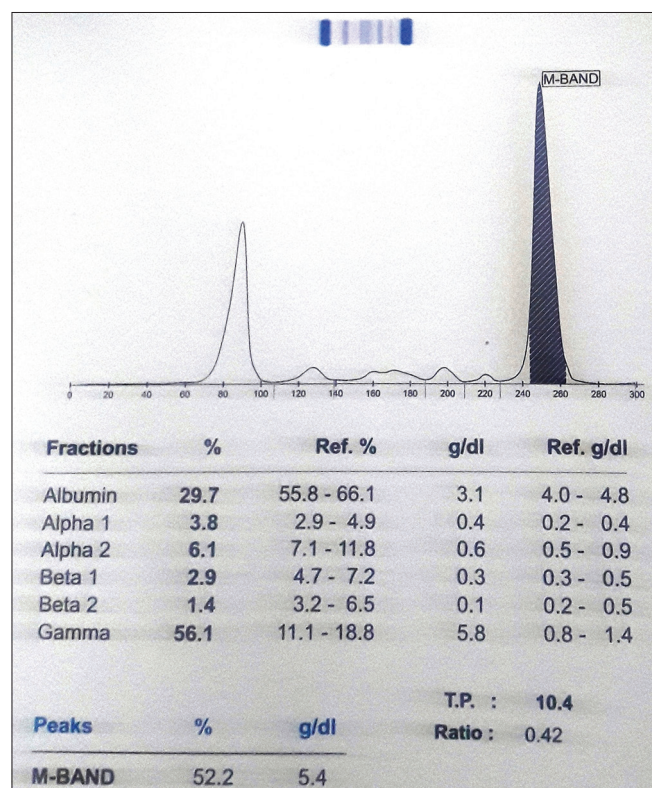


Figure 1: Serum protein electrophoresis

aspiration [Figure 2]. Plasma cells showed Dutcher body in bone marrow aspiration [Figure 3] as periodic acid–Schiff positive intranuclear inclusion [Figure 4]. The bone marrow biopsy showed loss of normal architecture with packed marrow studded by plasma cells [Figure 5].

Multiple myeloma account for 1% of all cancers and approximately 10% of all hematological malignancies.^[1] The peak incidence is seventh decade, and it is quite rare, below 40 years of age. The clinical and biological characteristics of multiple myeloma in young patients are similar to those in elderly as in literature in studies by Usha *et al.*^[2] and Bladé *et al.*^[3] The above case shows ditcher body inclusions in plasma cells on bone marrow aspiration.

Dutcher bodies were first described as intranuclear inclusion in a patient suffering from Waldenstrom macroglobulinemia.^[4] Initially, they were thought to originate in the nucleus as an immunoglobulin accumulation. However later studies proved their origin from cytoplasm. They appear as immunoglobulin accumulation in peri nuclear cistern by electron microscopy and latter get invaginate into or overlies nucleus.^[5] They were termed as periodic acid–Schiff positive intranuclear pseudoinclusions by World health organization 2008 classification.^[6] Russell bodies are another immunoglobulin intracytoplasmic inclusion when present as multiple body form, the so-called Mott cell.^[7] Dutcher bodies, single Russell body, and multiple Russell bodies (Mott cells) are aspects of the same phenomena.^[8] Dutcher bodies and Russell bodies can be seen in reactive and other B-cell neoplasms.^[9,10]

The case presents with all classical features of myeloma signs, symptoms, and laboratory findings including confirmation on bone marrow in spite of unusual younger age. One should rely on what eyes see and should consider

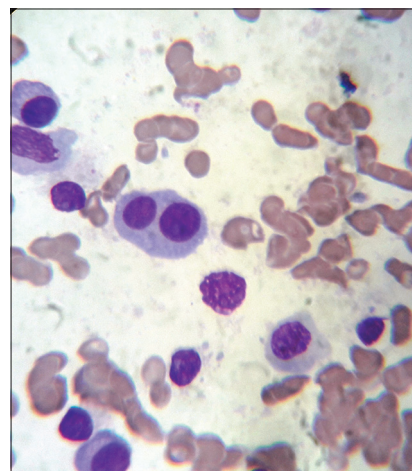


Figure 2: Bone marrow aspiration (Giemsa, ×40) binucleated cells

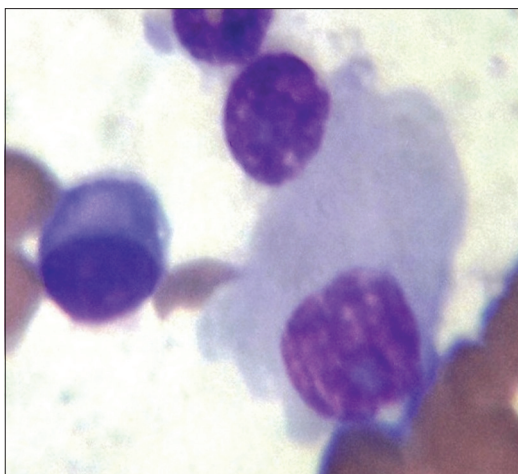


Figure 3: Bone marrow aspiration (Giemsa stain, ×100) intranuclear inclusion Dutcher body

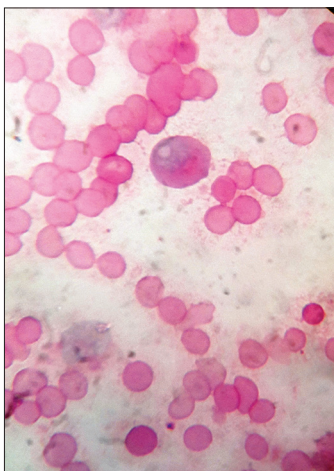


Figure 4: Bone marrow aspiration (PAS, 100×)

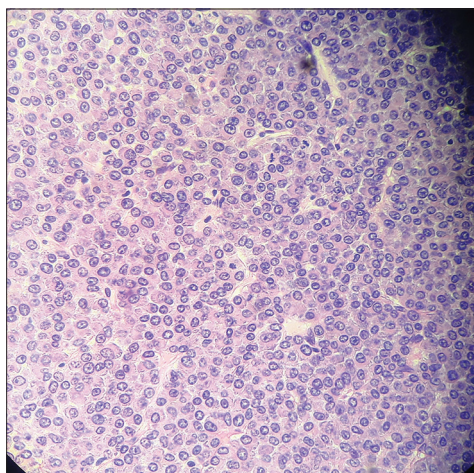


Figure 5: Bone marrow biopsy (H & E, 10×)

myeloma in young patients based on clinical, radiological, and laboratory findings. The increased reliance on automation, flow cytometry, morphological examination of cells is losing its shine. We therefore present this fascinating morphology for young pathologists to inculcate interest and importance of morphology in hematology as well as clinical pathology correlation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/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.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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