Gastric carcinoma initially presenting as bone marrow metastasis

Anita Tahlan, Annu Nanda, Uma Handa, Amanjit Bal, Harsh Mohan

Department of Pathology, Government Medical College and Hospital (GMCH), Chandigarh, India

For correspondence:
Harsh Mohan, Department of Pathology, Government Medical College and Hospital, Sector 32A, Chandigarh - 160 030, India. E-mail: drharshmohan@yahoo.com

How to cite this article:

A 52-year-old female presented with a history of low-grade fever for 2 months, anorexia and body aches for 2 weeks. On examination, splenomegaly along with cervical and supraclavicular lymphadenopathy were noted. Hemogram findings showed hemoglobin 6.0 gm%, total leukocyte count (TLC) 40,000/µl. Differential count had myelocytes 2%, metamyelocytes 5%, polymorphs 40%, lymphocytes 50%, monocytes 2%, eosinophils 1% and platelets 30,000/µl. Red blood cells showed mild degree of anisopoikilocytosis, mild hypochromasia with presence of microcytes, macrocytes, few normocytes and elliptocytes. Many polychromatophils and cells showing basophilic stippling were noted. Platelets were reduced on smear. Occasional hypersegmented polymorphs were seen. Nucleated red cell count of 125 cells per 100 white blood cells was noted. Thus corrected, TLC was 17,000/µl. An impression of leucoerythroblastic blood picture was made on peripheral blood smear; bone marrow aspiration and bilateral bone marrow trephine biopsy was done.

May-Grunwald-Giemsa (MGG) stained bone marrow aspirate smears showed small particles with hypocellular trails. Numerous scattered as well as clusters of large, round to oval malignant cells with moderate amount of cytoplasm were noted. Many cells showed inclusion like intracellular globules pushing the nucleus to one side [Figure 1]. Periodic acid Schiff (PAS) stain showed a bright magenta color of these globules. All the three hemopoietic series were suppressed. Sections from bilateral trephine biopsy

Figure 1: Bone marrow aspirate smear showing clusters and singly scattered tumor cells Inset: Inclusion like intracellular globules pushing the nucleus of tumor cells to one side (May - Grunwald - Giemsa 400x)

Figure 2: Trephine biopsy showing infiltration of the marrow spaces by signet ring cells (Hematoxylin and eosin, 200x) Inset: Mucicarmine stain showing a bright magenta color of these globules (200x)
biopsies showed complete replacement of the marrow by signet ring shaped tumor cells [Figure 2]. These cells were positive for PAS and mucicarmine stain [Figure 2, inset]. Thus a diagnosis of metastatic carcinoma (signet ring type) was rendered.

FNA done subsequently from left cervical and right supraclavicular lymph node showed similar findings. Histopathology of the right supraclavicular lymph node confirmed it to be metastatic adenocarcinoma (signet ring cell type). On further follow-up, upper gastrointestinal endoscopy showed an irregular ulcer with heaped-up margins and a necrotic ulcer base suggestive of a gastric malignancy. However, an endoscopic biopsy could not be taken due to excessive bleeding.

**DISCUSSION**

Osseous metastases are the most frequent of all malignant neoplasms of the bone. The tumors most frequently detected in bone marrow biopsies in adults are carcinoma of the breast, prostate, lung, stomach, colon, kidney and thyroid gland. These present as bone pains or pathologic fractures or may remain asymptomatic. X-ray findings reveal solitary or multiple osteosclerotic or osteolytic lesions. Bone metastases from gastric carcinoma cases occur in 0-17% of the patients. However, symptomatic bone metastasis as the initial symptom of gastric carcinoma is extremely rare. In a series of 1,112 gastric carcinomas, 5.4% presented with distant metastasis as the first symptom and none with bone metastasis.

Schirrhous carcinomas and poorly differentiated carcinomas are the predominant types of gastric carcinomas producing bone metastases. Various theories have been suggested as mechanism of bone marrow involvement in gastric carcinoma. Lehnert et al proposed the rich supply of blood capillaries in the gastric mucosa as the mechanism for an early spread of carcinoma to liver and bone. There is prevalence of involvement of red marrow with high blood flow rates in flat bones and spine. Nonportal route through the vertebral venous plexus might be an alternative to the portal route of bone metastasis from gastric carcinoma.

To conclude, although rare, a possibility of a primary tumor in the stomach should be kept in mind when dealing with manifestation of bone marrow metastasis as the presenting symptom.

**REFERENCES**