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GRANULOCYTIC SARCOMA IN BENIGN HYPERPLASIA OF PROSTATE: A CASE REPORT

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ABSTRACT: Granulocytic sarcoma is a leukemic deposit in extra medullary sites. Such infiltrate may originate often from acute myeloid or acute lymphatic leukemia and rarely a chronic lymphocytic leukemia. Granulocytic sarcoma can be associated with or precede or occur after treatment of leukemia. Granulocytic sarcoma of chronic myeloid leukemia origin is very rare in prostate. Association of granulocytic sarcoma with benign hyperplasia of prostate is not reported in literature. Granulocytic sarcoma of chronic myeloid leukemia origin in prostate of 55 years old male associated with benign hyperplasia prostate is presented for its rarity.

KEYWORDS: Granulocytic sarcoma prostate, Granulocytic sarcoma with benign hyperplasia of prostate, Granulocytic sarcoma of chronic myeloid leukemia.

INTRODUCTION: Leukemia is a hematologic malignancy with systemic manifestations and rarely presents as a focal parenchymal infiltration called as chloroma^{1,2} or Granulocytic sarcoma.³ Primary lesions that result in granulocytic sarcoma are acute myeloid leukemia(AML) acute lymphoblastic leukemia(ALL), chronic lymphocytic leukemia(CLL), and myelodysplastic syndrome(MDS) and rarely in chronic myeloid leukemia(CML).⁴ The noted sites of granulocytic sarcomas are skin, lymphnodes, and gastrointestinal tract, testes, soft tissues, and central nervous system, bones, mediastinum, lung, epidura, uterus, ovaries, eye and rarely prostate.¹⁻¹²

Chronic myeloid leukemia resulting in chronic granulocytic sarcoma of prostate is very rare⁹⁻¹² and more so association with benign hyperplasia of prostate is not reported in the literature so far. It is also important that such an extra medullary deposit can be a source of relapse in leukemia.

CASE REPORT: A 55 years old male patient presented to surgical clinic with complaints of decreased urine output, burning micturition and dribbling of urine since 15 days. General and systemic examinations were unremarkable. Routine laboratory investigations showed anemia with hemoglobin at 10.9gm%, WBC count of $5.6 \times 10^3/\mu\text{L}$ with all mature white cells and platelet count at $2.3 \times 10^3/\mu\text{L}$. Renal and liver function tests were within normal limits. Sonography of abdomen and pelvis revealed enlarged prostate measuring 5.3x4.4x4.3cm with normal echotexture, prostate specific antigen (PSA) level was 0.760ng/ml. With a provisional diagnosis of grade III benign prostatic hyperplasia, a transurethral resection of prostate (TURP) was done and the tissue was subjected to routine histopathological examination.

Resected prostate bits were grey white soft measuring 20cc volume and grossly unremarkable. Multiple H & E stained serial sections showed glandular and stromal hyperplasia of prostate (Fig. 1). The glands were lined by benign columnar epithelium and stroma showed smooth muscle hyperplasia along with focal nodular infiltrates (Fig. 2) consisting of hemopoietic cells including polymorphs, myelocytes, metamyelocytes and occasional promyelocytes (Fig. 3). Scant

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mature lymphocytic infiltrates in the stroma was also noted. Based on these histological features a diagnosis of granulocytic sarcoma of the prostate associated with benign adenomyomatous hyperplasia and chronic prostatitis was considered. A detailed enquiry into the past history revealed chemotherapy treatment for chronic myeloid leukemia 3yrs ago which the patient did not disclose at the time of admission due to fear of cancellation of surgical treatment.

DISCUSSION: Granulocytic sarcoma is an extra medullary accumulation of leukemic cells that occur in cases of acute myeloid leukemia, myelodysplastic syndrome, acute lymphoblastic leukemia, chronic lymphocytic leukemia and rarely in chronic myeloid leukemia.^{1-4,11,12} The noted sites of granulocytic sarcomas are skin, lymph nodes, GIT, testis, CNS, soft tissues and bones.^{6,8} These deposits were called as chloromas² since they have green color due to presence of myeloperoxidase and fade away on exposure to light. Granulocytic sarcoma occurs mostly in established leukemia and presents uncommonly as an isolated neoplasm.^{6,10} Leukemic infiltration of prostate is often acute myeloid leukemia^{9,10} or lymphocytic leukemia with the latter often misdiagnosed as non-hodgkin's lymphoma. Granulocytic sarcoma of prostate is uncommon and those reported are with mean age of 67 years.^{10,11}

Granulocytic sarcoma in prostate due to chronic myeloid leukemia in association with benign hyperplasia of prostate is not reported so far,⁹ Immunohistochemistry with anti MPO antibodies, CD68, CD43, and CD20, CD33 and CD117 can help in identification of granulocytic sarcoma⁵ when there is no evidence of peripheral leukemia.¹⁰ Granulocytic sarcoma can be a source of relapse of chronic myeloid leukemia as in our case.⁷ Relapses occur in about 4-5% cases of CML and AML and much lower in case of MDS. Urinary obstruction in granulocytic sarcoma of prostate in acute leukemia is reported,^{10,11} but not in granulocytic sarcoma of prostate in chronic myeloid leukemia as in our case. Primary granulocytic sarcoma of chronic myeloid leukemia in association with benign hyperplasia is not reported in literature and perhaps could be a nidus for relapse of leukemia and a stimulus for benign prostatic hyperplasia.

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Fig. 1: photomicrograph showing glandular stromal hyperplasia with nodular Leukemic infiltration H & E X 45.

Fig. 2: prostate tissue showing nodular Leukemic infiltrate with surrounding smooth muscle hyperplasia H&E X 100.

Fig. 1

Fig. 2

Fig. 3: Prostate tissue showing nodular Leukemic cell infiltrate showing polymorphism of Leukemic infiltrate H&E X 400.

Fig. 3

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