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Case Report

Breast Metastases from Rhabdomyosarcoma: Case Report

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ABSTRACT

Rhabdomyosarcoma (RMS) is the most common pediatric soft tissue sarcoma. The common extramammary tumours that metastasize to the breast are malignant melanoma, bronchogenic carcinoma, followed by a smaller number of primary tumours from the Gastro intestinal tract, genitourinary tract and rarely, RMS. Metastasis to breast is very uncommon from any primary. But it's been attributed that because of high vascularity during puberty of young women there is increased propensity of tumours to metastasize to the breasts. We report an intriguing, rare RMS with metastasis to the breast from perianal region.

Keywords: Rhabdomyosarcoma, Breast metastases, Sarcoma

INTRODUCTION

Rhabdomyosarcoma (RMS) is the most common pediatric soft tissue sarcoma, comprising 4%−8% of all malignancies and 10%−12% of all malignant solid tumors in children. [1] Extra mammary tumours metastatic to the breast represent 5.1% of all breast cancers and commonly occur in adolescents and young adults. The common extramammary tumours that metastasize to the breast are malignant melanoma, bronchogenic carcinoma, followed by a smaller number of primary tumours from the GI tract, genitourinary tract and rarely, RMS. [2] the propensity of tumours to metastasize to the breasts of young women has been attributed to the blood supply which increases during puberty and drops after menopause. [3] Pettinatto et al reviewed 113 tumours of the breast in adolescents and found 8 metastatic malignant tumours, out of which 3 were RMS of the alveolar type.[4]

RMS is histomorphologically classified into Embryonal/Botyroid, Alveolar, Pleomorphic and Undifferentiated. The most common sites of haematogenous dissemination are lungs, bone marrow, liver, and brain. Metastatic RMS of the breast is rare. The subtype most commonly associated with metastatic RMS of the breast is alveolar type, the primary site being the extremities. Here, we report an intriguing, rare case with metastasis to the breast from perianal RMS.

CASE REPORT

A 14 year old girl has presented to our institute with perianal swelling since 4 months. On physical examination she was found to have perianal swelling more towards left side crossing even on to right side and per rectal examination revealed sphincter spasm with narrowing and extrinsic compression.

Also patient had left inguinal lymph node of the size of 3*2cm and a swelling over the left clavicle of 4*3cm. Bilaterally the patient had breast lumps which were 4 in number on both sides largest measuring 6*5cm and smallest being 3*3cm which were firm to hard and mobile and replacing whole of the breasts (Figure 1).

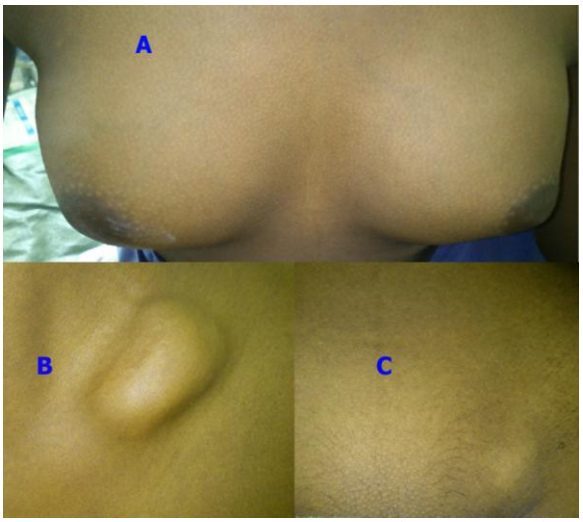

Figure 1. Secondary lesions in breasts, over left clavicle and left inguinal node.

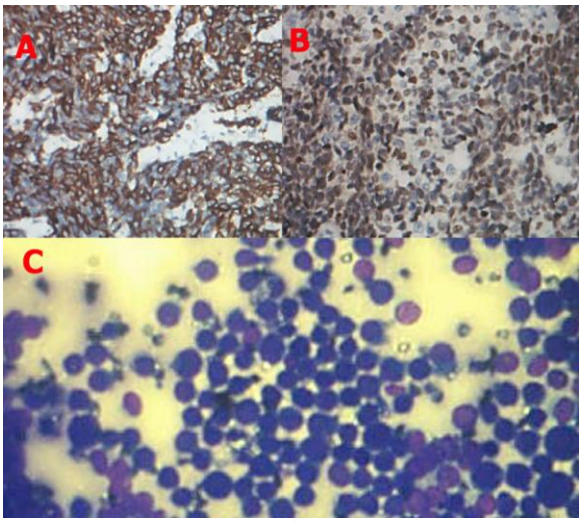

Figure 2. IHC showing positivity for desmin(a)and myo D1(b),and FNAC from breast(c) showing small round cells.

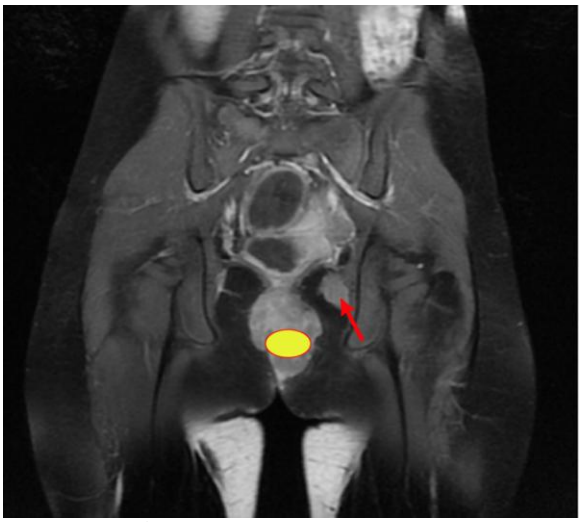
Figure 3. MRI of perianal region depicting Primary with Node secondaries.

Investigations at diagnosis included fine needle aspiration cytology, chest radiograph, radionuclide bone scan, bone marrow smears and biopsies as well as magnetic resonance imaging (MRI) of abdomen and pelvis for imaging the primary.

The patient was subjected for FNAC of the perianal swelling which revealed a small round cell tumor and was later the patient underwent incisional biopsy of perianal swelling and the histopathology report was malignant small round cell tumor with the tumor cells arranged in alveolar pattern in low power fields and showing hyperchromatic nucleated cells with occasional mitosis in high power field and Immunohistochemistry (IHC) was done and tumor cells were positive for markers Desmin and MyoD1 with focal positivity for

S100. Mic2, CK and EMA were negative. FNAC of Breast lesions, swelling over left clavicle and left inguinal lymph node were consistent with metastatic small round cell (Figure 2). Magnetic resonance imaging of the abdomen and pelvis shows a large well defined enhancing irregular soft tissue mass in perianal region more on left side involving anal canal and lower rectum causing luminal narrowing with enlarged lymph nodes in left ischiorectal fossa, left obturator and left inguinal regions (Figure 3). And the final pathological report is Alveolar Rhabdomyosarcoma perianal region with metastases to inguinal node, breast and over left clavicle.

DISCUSSION

RMS more commonly affects the head and neck region, the genitourinary tract and the extremities. The most common metastatic sites are bone, bone marrow, lung and lymph nodes. In some cases, the breast can be the site of the primary tumor or metastasis. [5,6]

In a series of 1,399 females registered from 1972 to 1992, in the Intergroup Rhabdomyosarcoma Study Group, Hays found seven cases of primary breast RMS and seven more cases with breast metastases at diagnosis. [7] Howarth et al. described 7 patients that developed metastases in the breast among 108 consecutive RMS patients with an incidence of 6.4%. [8] Metastasis to the breast has been claimed to happen frequently through hematogenous spread. [9]

Fine-needle aspiration cytology has been used to successfully identify metastatic rhabdomyosarcoma in the breast. [10] The frequency of metastases to the adolescent female breast observed in patients with rhabdomyosarcoma may suggest a preferential site for metastasis. [7] The reason for such a phenomenon remains unknown, but potential contributory factors have been described. The rhabdomyosarcoma cells are claimed to have insulin-like growth factor (IGF) receptor and are responsive to insulin like growth factor receptor-II. [11] Importantly, the breast epitheium and stroma are known to express growth factors IGF-I and IGF-II [12] and this would, theoretically, provide a suitable environment for metastatic rhabdomyosarcoma cell growth in the growing adolescent breast.

CONCLUSION

Mammary region should be part of the usual diagnostic workup in adolescent girls with alveolar RMS, especially if the primary tumor arises in the extremities. The poor prognosis, in spite of aggressive chemotherapy, confirms the need to explore different treatment strategies in these patients.

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