Isolated inguinal lymph node metastasis from breast carcinoma - case report and review of the literature

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Summary

We report on a case of a premenopausal woman with breast cancer and unusual disease dissemination with isolated inguinal and iliac lymph node metastasis. The primary tumor was T2N0M0. After mastectomy the patient received adjuvant chemotherapy, hormonotherapy and radiotherapy (RT). Painful edema developed at the right leg 69 months after the operation. Diagnostic investigations revealed isolated right inguinal and iliac lymphadenopathy (LAP). Tru-cut aspiration biopsy was reported as negative. Four months later, abdominal magnetic resonance imaging (MRI) disclosed paraaortic and bilateral iliac and inguinal LAP. Pathological assessment of the right inguinal LAP confirmed a metastasis from breast cancer. After unsuccessful chemotherapy, palliative RT was performed to the inguinal, iliac and paraaortic lymph nodes, resulting in partial response. The patient ultimately died because of disease progression. Clinicians should maintain a high degree of suspicion when coming across with unusual complaints and findings in patients with breast cancer.

Key words: breast carcinoma, groin, lymph nodes, metastasis

Introduction

Breast carcinoma is the most frequent cause of death from cancer in women. In an autopsy study, Hagenmeister et al. demonstrated that metastases were the primary cause of death in 45% of the cases [1]. Breast cancer is known to metastasize to all the organs of the body and common sites of metastases are the regional lymph nodes, bone, lung, liver and brain.

The initial sites of locoregional spread include frequently the axillary nodes, moderately the internal mammary nodes and rarely the lymph nodes near the intercostal arteries and veins. Therefore the most common site of nodal metastasis is the axillary region followed by the supraclavicular region. Isolated inguinal lymph node metastasis as the first clinical manifestation of breast carcinoma is quite infrequent and rarely reported in the literature.

Our report concerns a patient with breast cancer in whom the first clinical manifestation of tumor dissemination was inguinal lymph node involvement without any other documented metastasis.

Case presentation

A 36-year-old female presented with a lump she had recently noticed between the upper lateral and central quadrant of the right breast. A fixed mass 3 cm in diameter was palpable in physical examination. Mammography revealed a 34×35 mm mass located at the upper lateral quadrant of the right breast. Chest radiography and abdominal ultrasonography disclosed no metastasis. Bone scan showed only degenerative findings.
Wide excision revealed a tumor measuring 35×30×27 mm with extensive necrotic areas and intralymphatic thrombosis. The tumor, which was devoid of skin and fascia involvement, was histologically diagnosed as ductal carcinoma (with pleomorphic cells). Nuclear (NG) and histological grade (HG) were 2. Estrogen receptors (ER), progesterone receptors (PR), CerbB2 and Ki67 were negative immunohistochemically; p53 was (+).

Wide reexcision and axillary clearance showed no residual breast tumor and reactive findings in 12 lymph nodes. The case was classified as T2N0M0 and considered as high risk because of lack of ER, PR, presence of p53, HG 2 and NG 2. The patient received 6 cycles of adjuvant CMF (cyclophosphamide, methotrexate, 5-fluorouracil) chemotherapy, followed by tamoxifen 10 mg twice daily. Upon completion of chemotherapy, RT was delivered to the right breast (50 Gy/25 fractions by Cobalt 60, followed by a boost of 10 Gy/5 fractions with 9 MeV electrons).

At the 60th postoperative month, clinical and laboratory investigations were normal. At the 69th postoperative month the patient was referred because of edema and pain of the right leg. Neither LAP nor metastasis were present on abdominal and thoracic computed tomography (CT). At the 72nd month the same CTs were normal again, but ultrasonography revealed a right inguinal LAP measuring 33 mm which was biopsied (tru-cut aspiration) and diagnosed as benign tumor.

Upon increase in her complaints (pain, edema of the right leg), the patient underwent vascular evaluation by Doppler ultrasonography (USG) which revealed 2 LAPs measuring 3 cm and 2 cm in maximum diameters, located at the right inguinal and right iliac region, respectively. No metastases were identified by abdominal/thoracic CTs, abdominal ultrasound and gynecologic examination. CA15-3 serum level was 58 U/ml (normal value <30 U/ml). Abdominal MRI revealed multiple paraaortic and periportal LAP with maximal size of 2 cm, and bilateral iliac and inguinal LAP with maximal size of 3 cm. Pathologic evaluation of the lymph node excised from the right inguinal region confirmed the diagnosis of ER (-), PR (-) microtubular adenocarcinoma.

As a result the patient received 3 cycles of docetaxel 100 mg/m² i.v., every 3 weeks which resulted in disease stabilization. Abdominal MRI performed following the 3rd cycle of chemotherapy revealed bilateral inguinal LAP in the pelvis and paraaortic LAP with maximum diameters of 2.5 cm and 3 cm, respectively.

Since her pain and edema of the right leg deteriorated and regression was not achieved by chemotherapy, palliative RT was used. Cobalt 60 irradiation at a dose of 50 Gy/25 fractions was given through antero-posterior fields to the paraaortic and pelvic and inguinal nodes. Approximately 3 months later, the patient died because of progression of her illness.

Discussion

Two different hypotheses regarding metastasis have been discussed chronologically since it is not possible to predict the prognosis of breast carcinoma. The first hypothesis suggests that breast carcinoma is initially local without evidence of metastasis (Halstedian model). The second hypothesis has two variants: breast carcinoma is either initially local and remains locally or initially metastatic (Fisher hypothesis) [2-4].

Crow et al. made a projection in 1995 predicting that fewer than 10% of the patients would present with metastatic disease, but nearly 50% of newly diagnosed patients might eventually develop it [5].

In several autopsy series, it was mentioned that the skeletal system was the most frequently involved one (40-60%) and other organs involved were the lungs, liver, pleura, soft tissues and the brain [6,7]. Metastases to other organs were rarely reported [8-12]. Inguinal nodal metastasis as a first manifestation of generalized breast cancer has been reported extremely rarely [8,9,13].

Breast cancer metastasize by blood and lymphatic routes. Axilla was the main lymphatic drainage route in 75% of autoradiographic studies and in 97% of radioactive colloidal gold studies [14,15]. Parasternal nodes (internal mammalian) were the main lymphatic drainage route in 3% of autoradiographic studies and in 25% of radioactive colloidal gold studies [14,15]. In the presence of nodal metastases, obstruction of the physiologic routes of lymphatic flow may occur and alternative pathways may then become important. But these alternative pathways aren’t well established in early breast cancer [16]. The alternative routes that have been described are deep, substernal drainage to the contralateral internal mammary chain, superficial prepectoral crossover, lateral intercostal and mediastinal drainage, and spread through the rectus abdominis muscle sheath to the subdiaphragmatic and subperitoneal plexus (Gerota’s pathway) [6,17]. No evidence of an alternative pathway was present in our case.

In addition, the prevalence and pattern of distant metastases of breast carcinoma may be changing due to longer survival achieved by chemotherapy and/or hormonotherapy [18].
As a result of the increase of effective local therapy alternatives, the predicted locoregional recurrence rates after surgery and the distant metastases have been decreasing, leading to a relative increase of unpredicted regional metastases [17,19,20].

The distribution of breast cancer metastases in the abdominal region was similar in different series. Caskey et al. evaluated 260 breast cancer patients by abdominal CT scanning. Extrahepatic and extraskeletal metastases were demonstrated in 26 (10%) patients. Gastrointestinal system, lymphatic system, genitourinary system, soft tissue and endocrine system metastases rates were 6.9 %, 3.8 %, 1.5 %, 1.2 % and 0.4 %, respectively. Only 4 patients had isolated lymph node metastases ( paraaortic and/or coeliac and/or retrocrural and/or peripancreatic lymph node involvement) [8].

Except extrahepatic and extraskeletal metastases in the abdominal region, the lymphatic system is the most frequently involved system following the gastrointestinal system. Retroperitoneal and mesenteric lymph nodes were the mainly involved nodes [4]. Isolated intraabdominal or inguinal lymph node metastases were reported only rarely in various patient series [8,9,12-14]. Therefore it is difficult to define the frequency of abdominal lymphatic involvement. In the Fowble’s series of 990 breast cancer patients who underwent conservative surgery and RT, the 5-year actuarial rate for an isolated regional lymph node recurrence was 3% [21]. Inguinal lymph node metastasis as the first clinical manifestation of breast cancer is so rarely seen that it can be reported only in the form of case reports as in our presentation [12].

Knowledge of the initial tumor type may yield clues about the sites of metastasis. For instance, infiltrating ductal carcinoma (IDC) most commonly involves the lungs, pleura and brain, whereas infiltrating lobular carcinoma (ILC) most commonly involves the bone marrow, peritoneum and retroperitoneal structures, such as the ureters [9,22,23]. Our case was a rarely diagnosed case from this point of view since the histology of both primary and metastatic tumor was IDC.

In the literature, evaluation of hormone receptors (ER,PR) in tumor cells is a recommended method to ascertain the breast origin of metastases [9]. In our case, the metastatic tumor was ER (-) and PR (-) and similar results were found in the primary tumor.

A number of factors, such as paucity of retroperitoneal fat, and/or anatomic anomalies and tortuous blood vessels can make the radiologic detection of pelvic and inguinal lymph node metastases difficult [8,10]. In order to circumvent these problems and to detect atypical lymphatic metastases, other radiological techniques such as MRI or high resolution USG have been performed. Developing radiological technology will change our classical knowledge about metastases via raising diagnostic rates.

In conclusion, as the number of cases with unexpected sites of tumor dissemination increase, clinicians should maintain a high degree of suspicion when coming across with unusual complaints and findings.

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References