Case Report

Primary squamous cell carcinoma of the breast

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Abstract

Primary squamous cell carcinoma (SqCC) of the breast is a very rare tumor accounting for less than 0.1% of all invasive breast carcinomas. This is a very aggressive, hormone receptor negative and treatment refractory tumor with poor prognosis. We report a case of primary SqCC of the breast in a 72-year-old postmenopausal lady who presented with a lump in the right breast. The treatment of primary SqCC of the breast does not differ from other common histological types of breast cancer and may involve surgery, chemotherapy, hormonal therapy and radiation therapy. Clinical trials including large series of these rare tumors are needed to increase our knowledge and to improve patient's outcome.

Key words: Breast, carcinoma, squamous cell

Introduction

Squamous cell carcinoma (SqCC) is most common in the skin and other organs lined by squamous cells such as the esophagus and the anus. Primary SqCC of the breast is very rare accounting less than 0.1% of all invasive breast carcinomas.[1] Literature review showed that very few cases have been reported until now. This is a very aggressive, hormone receptor negative and treatment refractory tumor with poor prognosis. We report a case of this rare malignancy.

Case Report

A 72-year-old postmenopausal lady presented with a lump in the right breast. The lump was gradually progressive in size, not associated with pain, nipple discharge and retraction or dimpling of the skin. There was no family history of breast malignancy. Physical examination revealed firm, rubbery, non-tender and non-mobile lesion of 8 × 7 cm in upper outer quadrant of the right breast. Axillary lymph nodes were not enlarged. Mammogram of the right breast demonstrated a spherical mass lesion with ill-defined speculated margins. The skin and the nipple-areola complex were not involved. Lumpectomy was performed. Grossly, the tumor was 8 × 6 × 4 cm in size. The cut section showed gray white appearance with few cystic areas. On histopathology, diagnosis of SqCC with involvement of surgical margins was given. An extensive work-up ruled out other primary site or metastatic disease. Right modified radical mastectomy with axillary lymph nodes dissection was performed. Microscopically, the tumor was composed of sheets and clusters of round to polyhedral cells with pleomorphic hyperchromatic nuclei and a moderate amount of eosinophilic cytoplasm. Individual cell keratinization and keratin pearls were also seen [Figure 1]. The tumor cells were positive for cytokeratin and negative for estrogen and progesterone receptors. Hence diagnosis of primary SqCC of the breast was given. All 12 axillary lymph nodes were free of tumor. Overlying skin and areola was uninvolved by tumor.

Discussion

Pure primary squamous carcinoma is a rare and aggressive form of metaplastic carcinoma of the breast. Macia *et al.* defined pure SqCC with following criteria.[2]

- No other neoplastic components such as ductal or mesenchymal elements are present in the tumor
- The tumor origin is independent of the overlying skin and nipple
- Absence of an associated primary SqCC in a second site.

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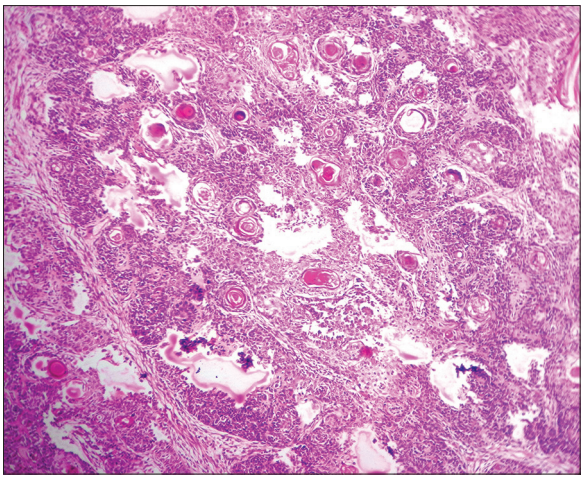

Figure 1: Sheets and clusters of round to polyhedral cells with pleomorphic hyperchromatic nuclei and moderate amount of eosinophilic cytoplasm along with individual cell keratinization and keratin pearls

According to Rosen *et al*., the presence of *in situ* squamous carcinoma in the ducts is a must for the diagnosis of primary squamous cell carcinoma.[3] They have defined squamous carcinoma as a lesion in which more than 90% of the neoplasm is comprised of squamous carcinoma or its variant.[3] In the case reported here, the tumor had an intraductal component and the carcinoma was comprised of more than 90% of malignant squamous cells. Rosen *et al*. have also mentioned that cystic degeneration was associated with primary SqCC and not with metastatic squamous cell carcinoma.[3] The etiology and pathogenesis of SqCC of the breast is still unclear. It has been suggested that it may be a very extreme form of squamous cell metaplasia developing into an adenocarcinoma. This could also explain the mixed forms.[4] Moreover, squamous cell metaplasia is also seen in cysts, chronic inflammations, abscesses and adenofibromas.[5] In our case, however, there was no such preexistent abnormality. In addition to a presentation with inflammation, the average size of the tumor is larger than adenocarcinoma of the breast.[5] SqCC of the breast is the tumor of elderly age group.[5] Tumors frequently reach large volumes and can be as large as 5 cm.[6] Our patient was 72 year old and she had a mass of 8 cm. There are no typical findings on the mammogram. Ultrasound may show a complicated cyst or an inflammatory process. Histopathologic examination of SqCC shows sheets of large malignant squamoid cells with intercellular bridges and keratin formation.[7] Squamous cell carcinomas are reported to result in less lymphatic spread than adenocarcinomas. In 10-30% of cases, there is lymph node infiltration at the time of surgery.[1,5] In contrast, about 30% of the patients will develop distant metastasis. The treatment of SqCC of the breast does not differ from other common histological types of breast cancer and may involve surgery, chemotherapy, hormonal therapy and radiation therapy. Due to its rarity the most appropriate therapeutic regimen for SqCC of the breast is still unclear. A recent literature review reveals that an average of 70% of patients with SqCC of the breast do not present axillary lymph nodes involvement, but due to unpredictable lymph node dissemination, axillary lymph nodes dissection could always be performed for staging purposes.[5] Rostock *et al*. suggests that SqCC is not sensitive to chemotherapeutic agents commonly used for ductal carcinoma such as methotrexate, cyclophosphamide, 5-fluorouracil (5-FU) and anthracycline.[8] A good response on metastatic disease has been reported in one patient who received cisplatin and 5-FU, but this has never been investigated in other report.[9] The breast SqCC is usually a high-grade and hormone receptor-negative tumor.[5] This means that hormone based therapy may not be effective in these tumors. Human epidermal growth factor receptor 2/neu is also usually not over-expressed or amplified in this disease.[8] The high frequency of epidermal growth factor receptor (EGFR) positivity is interesting and may be exploited in the development of future treatments. The prognosis of this type of breast cancer is still regarded as somewhat controversial, though many studies suggest that it is an aggressive disease that may behave like poorly differentiated breast carcinoma.[3,10] The 5-year survival is 67% in a small retrospective series of eleven patients.[5]

Conclusion

Primary SqCC of the breast is very rare and aggressive tumor having poor prognosis. Poor response of SqCC of the breast to chemotherapeutic regimens commonly used in breast cancer, suggests that EGFR inhibitors and platin based regimens could be a promising option for treatment of these tumors. Clinical trials including large series of these rare tumors are needed to increase our knowledge and to improve patient's outcome.

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