Malignant eccrine breast spiradenoma. A case report and literature review

Alejandra de Andrés Gómez *, Carla Navarro Moratalla, Francisco Villalba Ferrer, Vicente Sabater Marco, Andrés García-Vilanova, Carlos Fuster Diana, Jose Medrano González, Jesús Palao Errando

University GeneralHospital of Valencia, Av. De los Tres Creus, 2, 46014 València, Spain

ABSTRACT

INTRODUCTION: Eccrine spiradenomas are rare adnexal tumours of the skin that originate in the sweat glands. There are only three cases, including ours, diagnosed as malignant transformation in the breast. PRESENTATION OF CASE: We present a case of an asymptomatic 48 year old woman in whom the lesion was detected on the basis of breast cancer prevention programme. The metastatic study detection and the sentinel lymph node biopsy were negative so wide excision of the mass was performed with no further treatment. After 32 months of follow-up, there is no evidence of recurrent or metastatic disease in our patient. DISCUSSION: The lesions usually show a typical history of a long-standing unchanged cutaneous solitary nodule that becomes enlarged. The imaging findings of breast eccrine spiradenomas have not been clearly demonstrated. Diagnosis is based in histopathological findings of malignant focus.

A large list of uncommon dermatological skin malignancies and breast benign lesions can mimic malignant eccrine spiradenomas (MES); therefore, determination of immunophenotype allows narrowing differential diagnosis. Distant metastases portend an ominous prognosis. The mainstay of treatment is surgical removal with wide excision margins. Radiation and hyperthermic chemotheraphy can also be administered to prevent focal recurrence. Due to the high risk of developing metastases, close follow up of these patients for early detection of recurrence should be carried out.

CONCLUSION: Eccrine spiradenomas are rare adnexal tumours of the skin. Intraparenchymatous breast location is especially infrequent. Diagnosis is based on histopathological examination. MES metastasizes (40%), so a close follow up is recommended.

© 2015 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Eccrine spiradenomas are rare adnexal tumours of the skin that originate in the sweat glands. Only a few cases have been reported, being described for the first time by Kersting and Helming [1]. Though the majority of eccrine spiradenomas involve the head, trunk, and extremities [2], they can also appear all throughout the skin, mostly as painless solitary nodules. Most interestingly, intraparenchymatous breast location is especially infrequent.

Our case report is a malignant eccrine spiradenoma (MES/spiradenocarcinoma) diagnosed in an asymptomatic woman on the basis of breast cancer prevention programme. Because of its rare incidence and lack of imaging workups, there are only two previous reports of malignant breast spiradenoma. Our aim is therefore to discuss the main characteristics of it, and to review the literature available on this issue.

2. Presentation of case

A 48-year-old woman, asymptomatic, with no medical history of interest, presented in a mammography made as part of a breast cancer screening programme a lesion in the left upper-breast. The physical examination showed no palpable abnormalities, neither significant cutaneous change.

Plain radiographs revealed no calcifications in the superficial soft tissue. Mammography (Fig. 1) demonstrated a well-defined, isodense nodule located in the upper-outter quadrant of the left breast. No axillary lymphadenopathy was evidenced.

Sonographic examination of the patient was performed. Longitudinal and transverse scans with colour Doppler images were obtained. The images (Fig. 2) showed a well-defined lobulating mass measuring 18 × 13 × 15 mm with homogeneous hypo echogenicity. In the colour Doppler sonography no high vascular
flow was seen. Fascial planes were preserved. Axillary lymph nodes maintained preserved echostructure with cortical thickness less than 3 mm.

The patient underwent a US-guided 14-gauge core needle biopsy for pathologic evaluation. A histologic examination of these showed a characteristic biphasic population of outer small cells with darkly staining nuclei surrounding larger cells with pale cytoplasm without epidermal connection. The histopathological examination confirmed the diagnosis of eccrine spiradenoma [1].

Subsequently, total excision of the mass was performed with free resection margins. Intraoperative radiologic control of the excised lesion showed integrity of the nodule with broad resection margins.

Macroscopically the sample measured 4 x 2.5 cm in which on serial sectioning a 2 x 1.5 cm white nodule was noted.

Microscopic examination showed cells arranged in ragged sheets, nests, cords, and solid masses along with occasional irregular glandular structures. Two distinct cellular components were identified. Benign areas, was seen as sharply demarcated lobules composed of 2 cell populations (peripheral basaloid cells and central pale cells) arranged in nests with focal cystic changes. Adjoining to this 2-cell population focus (gradually or abruptly) proliferation cells with histopathological malignant characteristics transited to solid masses of a homomorphic large cell population with hyperchromatic and pleomorphic nuclei, eosinophilic cytoplasm (Fig. 3). Mean number of mitotic figure was 10-15HPF (high power fields). Invasion of the surrounding tissues characterize malignant transformation (Fig. 4). However, no lymphovascular or perineural invasion was recognized. The overlaying epidermis was unremarkable.

Immunohistochemically, both cellular areas exhibited p63 and were positive for smooth muscle actin (SMA). Focal reactivity for
EMAs and CEA was found in the central, large, pale cells. Luminal cells expressed MUC-1, CK 7, EMA, CEA, CK CAM5.2 and GCDFP-15. Around 40–50% of the cells composing the carcinomaous area showed positivity to Ki-67 (Fig. 5), p53 and cyclin D1. S-100, CK 20, vimentin, CD3, cromogranin and CK34betaE12, estrogen/progesterone receptors were not expressed.

These features were consistent with a low-grade MES noted to be arising from a pre-existing benign long-standing eccrine spiradenoma.

The patient underwent sentinel node biopsy guided by isotopic lymphogamagram. The sentinel lymph node retrieved from axillary dissection was submitted for intraoperative histological examination obtaining a negative result for metastatic carcinoma.

Metastatic workup detection (bone scan, computed tomographic scans of the chest, abdomen, and pelvis) was also negative.

The patient has been seen in follow-up every 3–6 months and has had yearly sonographic examinations. After 32 months of follow-up, there is no evidence of recurrent or metastatic disease.

3. Discussion

Eccrine spiradenomas are usually benign, well-defined sweat-gland neoplasms that affect both men and women, showing no sex predilection (male to female ratio 1:1) [2]. Age at presentation is variable, but most commonly arising at an age of 50 [2]. Spiradenoma lesions tend to arise on the head; neck; trunk; and, less commonly, the arms followed by the legs. The breast location is extremely rare [3]. However, the development of neoplasms with eccrine sweat gland phenotype in the mammary ducts is not surprising in as much as the breast is considered a modified sweat gland [6].

Since the original report, 102 cases of MES [4] have been documented in the literature. Of these, only six are described affecting the breast. There are only three cases, including ours, diagnosed as malignant transformation in the breast (Table 1).

Although, four of the five cases of breast spiradenomas were benign [7], 2 of these were reported to suffer malignant transformation, and one carcinosarcomatous conversion. Fortunately, only another case has demonstrated apocrine differentiation from abdominal tumour.

Reviewing the reports, the lesions usually show a typical history of a long-standing (often decades); unchanged cutaneous solitary nodule that suddenly becomes enlarged [5]. The average size of malignant spiradenomas at presentation is 3.9 cm (range 0.5–15 cm) in diameter, but usually 1–2 cm [8] in our patient. While pain is described as typical, this was not noted in our patient. The duration prior to diagnosis is usually long (20–30 years) [9]. It generally begets medical attention when a pre-existing undiagnosed lesion rapidly enlarges, changes colour, ulcerates, or becomes painful and tender.

Our patient showed no physical complaints, and palpation noted no pathological alterations.

The imaging findings of breast eccrine spiradenomas have not been clearly demonstrated because of the rare incidence of eccrine spiradenomas and the lack of imaging workup. The findings reported were: round or oval shape, well-demarcated masses hypo, or hyper-dense in mammography [5]. The US findings of the current case were characterized as well-circumscribed [5], oval-shaped, hypoechoic masses, surrounded by echogenic lines that represent the dermal layer.

Thomas et al. reported the first description of the sonographic findings of a MES in 1993 as a hypoechoic, heterogeneous lesion [5]. MRI, CT, and radiography can be used to assess the presence of metastatic foci in the case of malignant spiradenoma.

Although, an eccrine spiradenoma may resemble an epidermal inclusion cyst on mammography and US, these may be identified on the basis of MRI findings. The MRI [5] findings of epidermal inclusion cysts and eccrine spiradenomas are different [8–10] and so they might be used in making the differential diagnosis.

Diagnosis of MES is based on histopathological [11] examination and requires finding a focus of benign spiradenoma within or adjacent to the malignant tumour.

Nowadays, histological findings distinguish high and low-grade tumours. High-grade tumours show multiple foci of florid squamous differentiation, including proliferation of solid masses consisting of large cells with hyperchromatic nuclei, loss of PAS-positive basement membrane, sarcomatous cell metaplasia and surrounding cell reaction. The most aggressive forms are relatively easy to diagnosis. The mesenchymal elements are non-specific and are often described as rhadobomesarcoma, osteosarcoma, leiomyosarcoma, and chondrosarcoma.

On the other hand, in the absence of a benign focus, tumours can be confused with other skin malignancies. The diagnosis of these is much more difficult and requires finding benign focus on histopathology and an immunohistochemical myoepithelial benign profile in consonance with the finding of two cell populations [12].

In our case, histologically proliferation of cells with hyperchromatic pleomorphic vesicular nuclei, variably prominent nucleoli, increased mitoses, invasion of surrounding membrane and adipose mammary tissue characterized malignant transformation.

Immunohistochemically, the cells express immunophenotypes similar to myoepithelial cells with a variable expression of p63 and SMA, and ductal differentiation cells expressing CEA, EMA, CK7, MUC-1, CKCAM5.2 y GCDFP-15. s-100 [7] protein positivity in basal epithelial cells has been demonstrated [2], but was not evidenced in our case.

Biernat et al. suggest overexpression of p53 protein in MES has been associated with malignant transformation [13]. We also identified Ki-67 and D1-cyclin expression, as a result of a low-grade differentiation tumour. While the immunohistochemical profile of benign or malignant eccrine spiradenoma is not diagnostic of an eccrine neoplasm, it is helpful in elucidating the cellular differentiation and narrowing the differential diagnosis.

The mainstay of treatment is surgical removal with wide excision margins [5]. Radiation and hyperthermic chemotherapy can also be administered as medical treatment to prevent focal recurrence [5]. In our case, the wide excision performed permitted us to dispense radiation treatment.

Malignant eccrine spiradenoma metastasizes (40%) [6] to regional lymph nodes, bone, lungs, brain, and liver [14,15] (in descending order of frequency). Therefore, regional lymph nodes
should be dissected if tumor metastases are suspected clinically. Distant metastases portend an ominous prognosis, but if possible, resection should be done. We did not implement an axillary dissection, as sentinel node biopsy turned out negative. Due to the high risk of developing metastases, close follow up of these patients for early detection of recurrence should be carried out.

4. Conclusion

Eccrine spiradenomas are rare adnexal tumors of the skin. Intraparenchymatous breast location is especially infrequent. The duration prior to diagnosis is usually long. Diagnosis of MES is based on histopathological examination. Malignant eccrine spiradenoma metastasizes (40%), so a close follow up is recommended.

Conflicts of interest

The authors declare that they have no competing interests.

Funding

The authors declare that there is not any source of funding for this surgery case report.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

Francisco Villalba Ferrer, Andrés Garcaí Vilanova, Carlos Fuster Diana, Jose Medrano González: surgery, follow up and surgical comment on the clinical case.

Alejandra de Andrés Navarro: literature review and development of the case.

Navarro: revision of the case and translation.

Vicente Sabater Marco: study and pathological comment.

Jesús Palao Errando: study and radiological comment.

References

[1] D.W. Kersting, E.B. Heljging, Eccrine spiradenoma, AMA Arch. Derm. 73 (1956) 199–227.
[2] Alfredo Ribeiro-Silva, Catarina Saletich, Renata Scarpat Careta, Daryi Komiizu Razava, Mateus Campos Siqueira, Fábio Fonton, Spiradenocarcinoma of the breast arising in a long-standing spiradenoma, Annu. Diagn. Pathol. 8 (2004) 162–166.
[3] M.M. Bosch, M.E. Boon, Fine-needle cytology of an eccrine spiradenoma of the breast: diagnosis made by a holistic approach, Diagn. Cytopathol. 8 (1992) 366–368.
[4] T. Michael, B.A. Andreoli, M.F. Kamal, M.D. Itani, Malignant eccrine spiradenoma: a meta-analysis of reported cases, Am. J. Surg. 201 (2011) 695–699.
[5] B. Thomas, V. Duwel, L. Proot, J. Vanvuchelen, An uncommon breast tumour: the malignant eccrine spiradenoma, Acta Chir. Belg. (1993) 295–298.
[6] M.H. Saboorian, M. Kenny, R. Ashfaq, Jorge Albores-Saavedra, Carcinoma arising in eccrine spiradenoma of the breast, Arch. Pathol. Lab. Med. 120 (May) (1996) 5.
[7] Yuko Tanaka, Ekapot Bhunchet, Toshikatsu Shibata, A case of malignant eccrine spiradenoma metastatic to intrammary lymph node, Breast Cancer 15 (2008) 175–180.
[8] Hyun Ho Lee, Sung Hee Park, Hye Young Choi, Heung Kyu Park, Eccrine spiradenoma arising in the breast misdiagnosed as an epidermal inclusion cyst, Korean J. Radiol. 12 (2) (2011) 256–260.
[9] L. Requena, H. Kiyu, B. Ackerman, Spindelocarcinoma, In Neoplasms With Apocrine Differentiation With Analogues In Breast Pathology, Lippincott-Raven, PA, Philadelphia, 1998, pp. 751–769.
[10] S.H. Hong, H.W. Chung, J.V. Choi, Y.H. Koh, J.A. Choi, H.S. Kang, MRI findings of subcutaneous epidermal cysts: emphasis on the presence of rupture, AJR Am. J. Roentgenol. 186 (2006) 961–966.
[11] Y.D. Han, Y. Huan, J.L. Deng, C.H. Zhang, MRI appearance of multiple eccrine spiradenoma, Br. J. Radiol. 80 (2007) E27–E29.
[12] E. Ben Brahim, M. Sfia, M. Tangour, R. Makhlof, B. Cribier, S. Chatti, Malignant eccrine spiradenoma: a new case report, J. Cutan. Pathol. 37 (2010) 478–481.
[13] W. Biernat, E. Wordek, L. Wolniak, Over-expression of p53 protein as an indicator of the malignant transformation of spiradenoma, Histopathology 26 (1995) 439–443.
[14] F. Meriggio, R. Tagliabò, G. Morone, P. Tenti, M.F. Zadra, G. Ricevuti, E. Forni, The potential malignancy of eccrine spiradenoma, Ital. J. Surg. Sci. 19 (1980) 265–268.
[15] I. Mirza, R. Kloss, S.C. Sieber, Malignant eccrine spiradenoma, Arch. Pathol. Lab. Med. 126 (2002) 591–594.