Secondary Intention Healing following Mohs Micrographic Surgery for Basal Cell Carcinoma of the Nipple and Areola*

Aparna Sinha[1] and James A. A. Langtry[2]
Department of Dermatology, [1]Sunderland Royal Hospitals, Chester Road, Sunderland, SR4 7TP, and [2]Royal Victoria Infirmary, Newcastle upon Tyne, United Kingdom. E-mail: lane.aparna@goolemail.com
Accepted March 25, 2010.

Basal cell carcinoma (BCC) is the most common malignancy occurring in white Caucasians worldwide and the incidence of BCC is rising. The majority of BCCs occur sporadically on sun-exposed areas of the head and neck, with ultraviolet radiation (UVR) considered an important aetiological factor (1). However, BCCs also occur on covered and non-sun-exposed sites, including the nipple and areola, axilla, hands, feet, inguinal and genital areas. These are often referred to as being "unusual" sites for BCC and occur in the absence of immunosuppression, exposure to carcinogens or a hereditary predisposition (2). BCC has been postulated to originate from pilosebaceous units. It is, however, more generally accepted that pluripotent epithelial cells in the epidermis or adnexal structures can mature into any epithelial structure (3).

CASE REPORT

A 69-year-old Caucasian man was referred with a 3-year history of an enlarging, pruritic papule on his right nipple. This was associated with bleeding and crusting, which led the patient to seek attention. There was no past history or family history of skin cancer. Nifedipine was his only medication for hypertension.

During the ages of 16–24 years he had combined work on a farm, frequently without his shirt on, with work in a steel factory. Subsequently he had worked indoors in a steel factory and then in a glass factory until his retirement.

Examination revealed a poorly-defined, 14 × 11 mm, pink and telengiectatic, irregular plaque involving the right nipple and areola with central ulceration (Fig. 1A). The left nipple and areola was normal and there were no other abnormalities seen on skin examination, including absence of regional lymphadenopathy. A mammogram was performed, which was normal. Incisional biopsy of the lesion revealed evidence of a mixed nodular and superficial type BCC.

Mohs micrographic surgical (MMS) excision was performed in view of the ill-defined edges of the tumour, to ensure tumour-free margins and tissue preservation. Tumour-free margins were achieved following four stages and five blocks. The final defect measured 22 × 11 mm (Fig. 1B). This was allowed to heal by secondary intention. Healing occurred within 3 weeks and the cosmetic appearance after 5 months is shown in Fig. 1C. Follow-up after 2 years showed no sign of recurrence, with an excellent cosmetic outcome.

DISCUSSION

There are 31 reported cases of BCC of the nipple-areola complex in the literature, and these are summarized in Table SI (available from http://adv.medicaljournals.se/article/abstract/10.2340.00015555-0935). Two-thirds of cases have been reported in men, which may be explained by a greater amount of sun exposure to this area.

The frequency of histological subtype for BCC of the nipple-areola complex is unknown. Fourteen of the reported cases gave further details of histology and, of these, three were infiltrating BCCs (4–6), three had invasion of the lactiferous ducts (7–9), four were superficial (10–13) and three were nodular (9, 12).

There has been some debate as to an increased potential to metastasis for BCC at "unusual" sites, but this has not been substantiated. The reported metastatic rate in BCCs ranges from 0.0028 to 0.5% (14). Those with a higher risk of metastasizing are large, neglected tumours, those invading bone with a morpheaform and infiltrative tumour histology (14). Three of the 31 BCCs of the nipple-areola complex reported have apparent axillary lymph node involvement (15–17). Only one histologically confirmed the presence of BCC in the axillary lymph nodes (15); a case that reports a 54-year-old man who had had a nipple

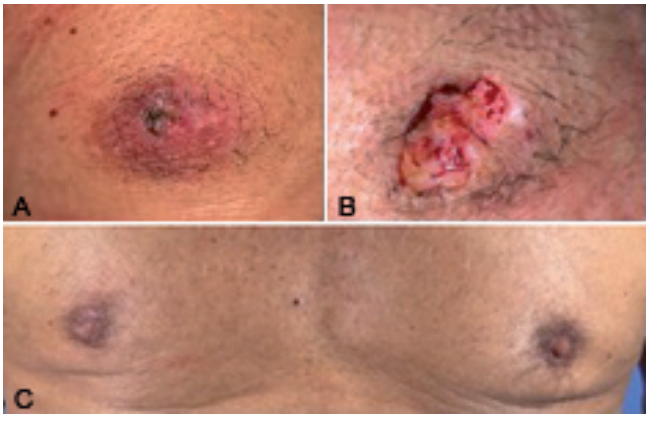

Fig. 1. (A) Appearance of right nipple at presentation. (B) Appearance of defect immediately post-operatively. (C) Appearance of right nipple compared with normal left nipple 5 months post-surgery.

*This work was presented at the 85th British Society of Dermatological Surgery annual scientific meeting at the British Association of Dermatologists in 2005.

resection followed by radiotherapy for BCC of the left nipple 4 years prior to presenting with discomfort under his left arm on movement and radiation changes on the left breast. Metastatic BCC was demonstrated in the left axillary lymph node following left axillary dissection, but no tumour present in the skin, breast or muscle tissue following a left mastectomy.

The majority of the reported cases have been treated with simple excision. Radiotherapy has been used in two cases: one following wedge biopsy showing an invasive BCC; however, long-term follow-up was not carried out in this case (6), and in the other case, described above, axillary node involvement confirming metastatic BCC developed 4 years later (15). Etretinate has also been used for 3 months in one case, with complete resolution of the BCC confirmed histologically (18). Four of the 31 cases were treated with mastectomy (16, 19, 20) and one with a partial mastectomy (11). So far only five cases have been treated with MMS, two with infiltrating histology (4, 5, 10, 21, 22).

Eight of the 31 cases reported mammographic findings. Of these, five were normal (4, 5, 7, 10, 11), two revealed calcification (8, 23) and one had involutional changes and dermal thickening (6). Two patients with infiltrative BCCs (4, 5) and one patient with BCC invading the lactiferous ducts (7) had normal mammograms. In the other two patients with normal mammograms, the histology later revealed superficial BCC (10, 11). Involutional changes and dermal thickening on mammography were found in one infiltrating BCC (6). Microcalcifications were found in one invasive BCC (8), while the other case showing calcifications in the areola on mammography did not report any histological details (23).

Our patient had an ill-defined BCC of superficial and nodular histological subtype that was treated with MMS following a normal mammogram and normal clinical examination of the axillary lymph nodes. MMS of BCC of the nipple-areola complex has the potential for high cure rates and tissue preservation by producing tumour-free surgical margins. This is especially important when the tumour edges are difficult to determine.

Secondary intention healing is an important method of wound management, allowing excellent cosmetic results in selected wounds (24). Our patient had a cosmetically acceptable result following secondary intention healing postoperatively of the BCC of his nipple-areola complex. We are not aware of previous reports of the outcome of secondary intention healing of the nipple-areola complex.

REFERENCES

1. McCormack CJ, Kelly JW, Dorevitch AP. Differences in age and body site distribution of the histological subtypes of basal cell carcinoma. A possible indicator of differing causes. Arch Dermatol 1997; 133: 593–596.
2. Betti R, Bruscagin C, Inselvini E, Crosti C. Basal cell carcinomas of covered and unusual sites of the body. Int J Dermatol 1997; 36: 503–505.
3. Ee HL, Tan SH, Kumarasinghe SPW. Plantar basal cell carcinoma: a possible eccrine origin. Clin Exp Dermatol 2004; 24: 678–679.
4. Rosen N, Muhn CY, Bernstein SC. A common tumour, an uncommon location: basal cell carcinoma of the nipple and areola in a 49 year old woman. Dermatol Surg 2005; 31: 480–483.
5. Sanchez-Carpintero I, Redondo P, Solano T. Basal cell carcinoma affecting the areola-nipple complex. Plast Reconstr Surg 2000; 105: 1573.
6. Sauven P, Roberts A. Basal cell carcinoma of the nipple. J R Soc Med 1983; 76: 699–701.
7. Gupta C, Sheth D, Snower DP. Primary basal cell carcinoma of the nipple. Arch Pathol Lab Med 2004; 128: 792–793.
8. Yamamoto H, Ito Y, Hayashi T, Urano N, Kato T, Kimura Y, et al. A case of basal cell carcinoma of the nipple and areola with intraductal spread. Breast Cancer 2001; 8: 229–233.
9. Cain RJ, Sau P, Benson PM. Basal cell carcinoma of the nipple. Report of two cases. J Am Acad Dermatol 1990; 22: 207–210.
10. Zhu YI, Ratner D. Basal cell carcinoma of the nipple: a case report and review of the literature. Dermatol Surg 2001; 27: 971–974.
11. Huang CW, Pan CK, Shih TF, Tsai CC, Juan CC, Ker DG. Basal cell carcinoma of the nipple-areola complex: a case report. Kaohsiung J Med Sci 2005; 21: 480–483.
12. Betti R, Martino P, Moneghini L, Vergani R, Tolomio E, Crosti C. Basal cell carcinomas of the areola-nipple complex: case reports and review of the literature. J Dermatol 2003; 30: 822–826.
13. Bruce S, Tschen JA, Goldberg LH. Basal cell carcinoma of the nipple. J Dermatol Surg Oncol 1985; 11: 424–425.
14. Saladi RN, Singh F, Wei H, Lebwohl MG, Phelps RG. Use of Ber-EP4 protein in recurrent metastatic basal cell carcinoma: a case report and review of the literature. Int J Dermatol 2004; 43: 600–603.
15. Shertz WT, Balogh K. Metastasizing basal cell carcinoma of the nipple. Arch Pathol Lab Med 1986; 110: 761–762.
16. Wyatt AP. Basal cell carcinoma of the male breast. Proc R Soc Med 1965; 58: 509–510.
17. Wainwright JM. Carcinoma of the male breast. Arch Surg 1927; 14: 836–859.
18. Jones R, Wayte DM, Mitchell E, Beer WE. Basal-cell carcinoma of the breast – treatment with retinoids. Clin Exp Dermatol 1991; 16: 448–450.
19. Benharroch D, Geffen DB, Peiser J, Rosenberg L. Basal cell carcinoma of the male nipple. J Dermatol Surg Oncol 1993; 19: 137–139.
20. Congdon GH, Dockerty MB. Malignant lesions of the nipple exclusive of Paget's disease. Surg Gynecol Obstet 1956. 103: 185–192.
21. Nouri K, Ballard CJ, Bouzari N, Saghari S. Basal cell carcinoma of the areola in a man. J Drugs Dermatol 2005; 4: 352–354.
22. Weber PJ, Moody BR, Foster JA. Series spiral advancement flap: an alternative to ellipse. Derm Surg 2001; 27: 64–66.
23. Cooper RA, Eilers DB. Mammographic findings in basal cell carcinoma of the male nipple. AJR 2000; 175: 1065–1066.
24. Zitelli JA. Wound healing by secondary intention. J Am Acad Dermatol 1983; 9: 407–415.