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Incidental Merkel cell carcinoma in a cutaneous horn: a case report

Brian A. Schick[1], Joshua S. Tobe[2], Mariamma G. Joseph[1], Tyler B. Rouse[3], Manal Y. Gabril[1]

1 Department of Pathology, London Health Sciences Centre and Western University, London, Ontario, Canada
2 Schulich School of Medicine & Dentistry and Western University, London, Ontario, Canada
3 Department of Pathology, Huron Perth Healthcare Alliance, Stratford General Hospital, Stratford, Ontario, Canada

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Corresponding Author: Dr. Manal Y. Gabril, MD, FRCPC, London Health Sciences Centre, Department of Pathology, University Hospital, 339 Windermere Road, London, Ontario, Canada N6A5A5. Tel. 519 685 8500 x 32956; Fax. 519 663 2930. Email: manal.gabril@lhsc.on.ca

ABSTRACT Merkel cell carcinoma (MCC) is a rare cutaneous neuroendocrine malignancy, which usually presents as an asymptomatic, rapidly growing, firm nodule on sun-damaged skin. We present a 93-year-old female who presented with a "cutaneous horn" on the face. On excision, histologic examination revealed a combined squamous cell carcinoma in situ with underlying MCC. Merkel cell polyomavirus immunohistochemistry was negative in this lesion. This case report highlights the significant association between MCC and squamous cell carcinoma and the uncommon clinical presentation of this combined tumor in the form of a cutaneous horn.

Introduction

Merkel cells, which likely derive from the neural crest, are basally located skin cells believed to function in mechanoreception and/or the neuroendocrine system. Merkel cell carcinoma (MCC), is a rare cutaneous malignancy first described in 1972 by Toker [1]. Also known as primary neuroendocrine carcinoma of skin, this aggressive neoplasm has a higher mortality rate than melanoma and an annual incidence of 0.6 per 100,000 in the United States [2]. MCC in combination with other primary epithelial malignancies and clinically presenting as a cutaneous horn is a rarity. Herein we report such a case.

Case report

A 93-year-old female presented with a six-month history of an enlarging cutaneous horn over the left angle of the mandible. She underwent local excision and microscopic examination revealed a squamous cell carcinoma in situ (SCC-IS) with an underlying dermal MCC. A chest x-ray was negative for a primary small-cell lung cancer. The patient was advised of a 50-60% recurrence rate and offered wide local excision with ipsilateral neck dissection and radical radiotherapy. She opted for yearly clinical and radiographic (CT head and neck) surveillance and is currently free of disease 24 months after the local excision.

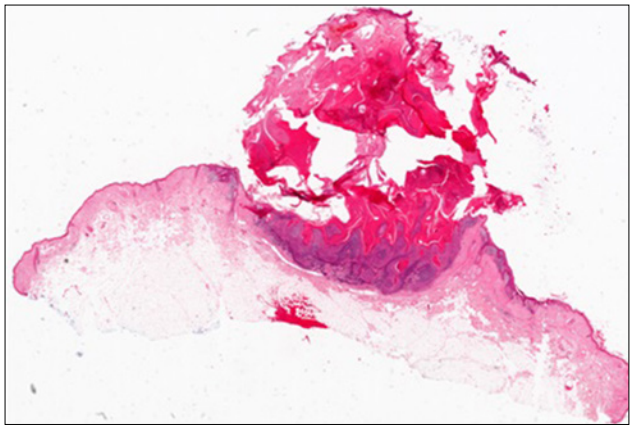


Figure 1. Whole mount view of the cutaneous horn, composed predominantly of a hyperkeratotic SCC-IS, with an underlying lesion. Hematoxylin and eosin (H&E). (Copyright: ©2015 Schick et al.)

Pathological findings

Histologic examination of the cutaneous horn showed a SCC-IS with marked hyperkeratosis, acanthosis and full thickness atypia of the squamous epithelium (Figures 1, 2A, 2B). There was an underlying dermal MCC with an infiltrative growth pattern, composed of a monotonous population of malignant small cells with hyperchromatic nuclei, scant cytoplasm, frequent mitoses (14/mm^2) and apoptotic bodies (Figure 2C). The estimated MCC tumor thickness was 1.6 cm. The closest deep margin was 1.5 mm, the closest peripheral margin was 8.0 mm, and there was no lymphovascular invasion.

The immunohistochemical phenotype of the dermally located malignant cells was consistent with a primary cutaneous MCC, with dotlike cytoplasmic positivity for CK20, diffuse positivity for chromogranin A and synaptophysin, and strong nuclear positivity for Ki-67 (Figure 3A-C). Immunohistochemical stains for the Merkel cell polyoma virus (MCPV; Calbiochem® Anti-SV40 T Antigen AB2 Mouse mAb), TTF-1, and CK7 were negative.

Discussion

MCCs usually present in late adulthood, slightly more commonly in women, as an asymptomatic, rapidly growing, pink-red or violaceous, firm solitary papule or nodule, typically on the head or neck, but also on the extremities or the buttocks. They are aggressive, often with early metastases and a fatal outcome. Risk factors include sun damage, age > 60 years, immunodeficiency, arsenic exposure, statin therapy, and psoriasis treatments (100-fold risk with methoxsalen and ultraviolet A). Merkel cell polyomavirus (MCPV) was discovered in 2008, and is monoclonally integrated into the host genome of approximately 75% of MCCs [3]. The cell of origin is unknown; proposed culprits include primitive pluripotent adnexal or epidermal stem cells, and neural crest-derived cells of the amine precursor uptake and decarboxylation (APUD) system [4].

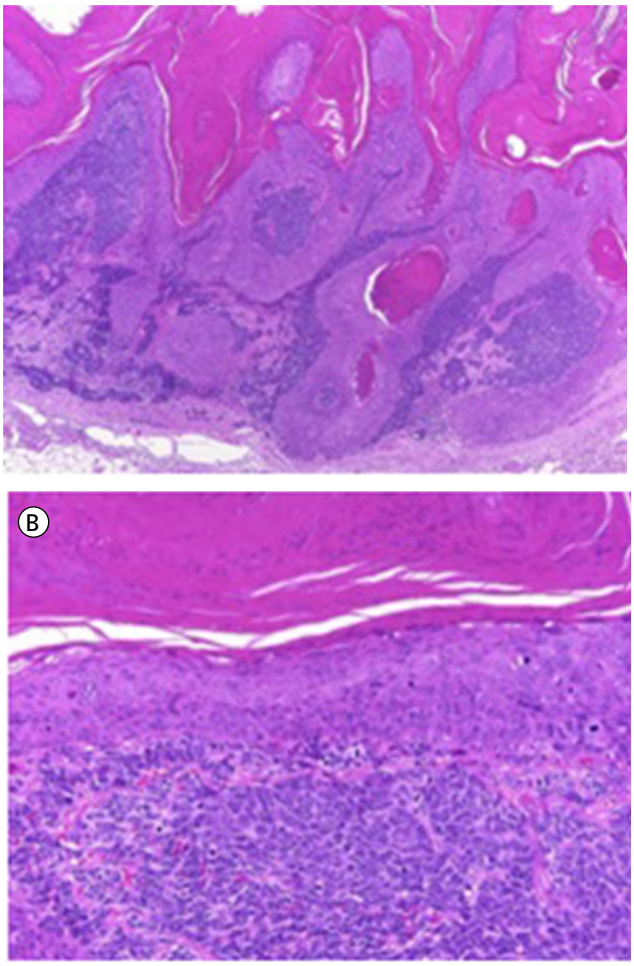


Figure 2. (A & B) Higher magnification shows two lesions: a SCC-IS and underlying MCC located in the dermis. H&E. (Copyright: ©2015 Schick et al.)

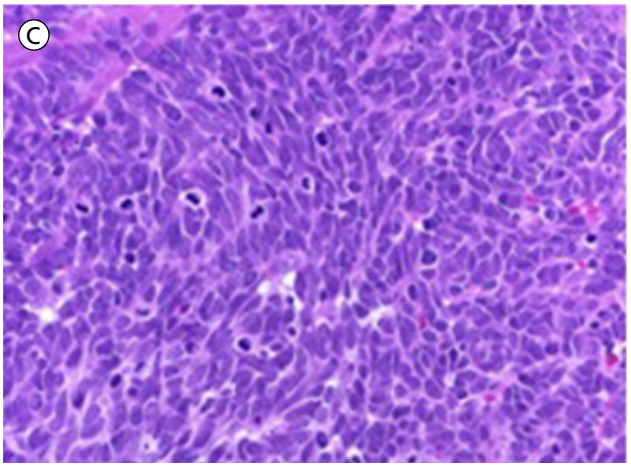
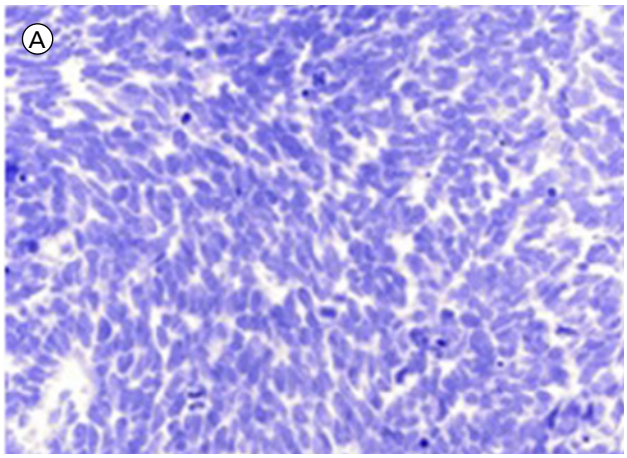
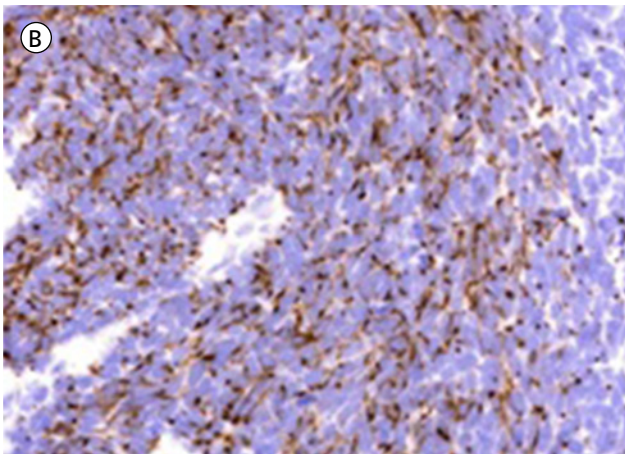


Figure 2C. The MCC is composed of malignant small blue cells with oval nuclei, finely dispersed chromatin, scant cytoplasm, and frequent mitoses. H&E. (Copyright: ©2015 Schick et al.)

An informative literature review performed by Walsh tallies the cases of MCC associated with SCC (both in-situ and invasive), Bowen's disease (BD), basal cell carcinoma, actinic keratosis and other sweat gland adnexal carcinomas.





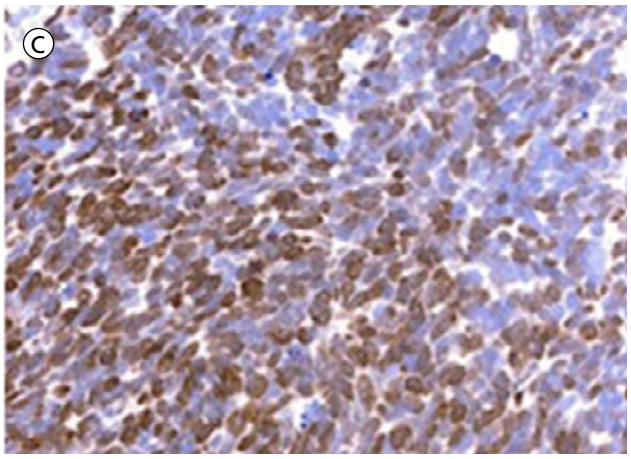


Figure 3A. The MCC cells are negative for MCPV. (Copyright: ©2015 Schick et al.)
Figure 3B. The MCC cells demonstrate dot-like positivity for CK20. (Copyright: ©2015 Schick et al.)
Figure 3C. The MCC cells demonstrate strong positivity for Ki-67. (Copyright: ©2015 Schick et al.)

[5] In this review, there is a 37% association of MCC with SCC; 26% of MCCs with overlying BD or AK [5]. In addition, in a detailed evaluation of 29 cases of MCC in her own centre, Walsh demonstrated either SCC (3) or BD (5) in the tumor [5]. The genesis of combined tumors and the significant morphologic link between SCC and MCC is attributed to chronic sun damage explaining the propensity of these tumors to involve the head and neck region of elderly patients [5]. This association also highlights the importance of thorough histological evaluation of lesions suspicious of MCC, although there is no significant difference in outcome in these combined tumors [5]. Clinically, the bulk of the documented case reports of these combined tumors highlight an array of presentations: papules, nodules, ulcerations, erythematous plaques and keratotic plaques [5-11]. Hyperkeratotic projections of the skin in the form of a cutaneous horn, as described in our case report, has not been previously documented.

The etiological role of MCPV in solitary and combined MCCs is not fully understood. It has been reported that approximately 75% of pure MCCs show immunohistochemical positivity for the MCPV, yet nearly all combined MCCs appear to be MCPV negative [12]. In our case, both the SCC-IS and the MCC were non-reactive for MCPV.

Tumor thickness (measured from the stratum granulosum to the deepest infiltrating tumor cells), tumor growth pattern (nodular or infiltrative), and lymphovascular invasion are independent predictors of survival and disease stage in patients with MCC [13]. There are no guidelines regarding the measurement of tumor thickness in combined tumors. The primary tumor thickness, an important prognostic indicator, was difficult to determine in the presented case.

We report a rare case of MCC combined with SCC-IS, and its unusual presentation as a cutaneous horn. Ongoing investigation of the oncogenic role of MCPV in pure and combined MCCs may facilitate the development of adjuvant treatment modalities including targeted immunostimulation. This case report demonstrates the rare association of MCC with other primary cutaneous epithelial malignancies, and highlights the importance of thorough histologic evaluation of clinically suspicious Merkel cell carcinomas.

References

1. Toker C. Trabecular carcinoma of the skin. Arch Dermatol 1972;105(1):107-10.
2. Albores-Saavedra J, Batich K, Chable-Montero F, et al. Merkel cell carcinoma demographics, morphology, and survival based on 3870 cases: a population based study. J Cutan Pathol 2010; 37(1):20-7.
3. Spurgeon ME, Lambert PF. Merkel cell polyomavirus: a newly discovered human virus with oncogenic potential. Virology 2013;435(1):118-30.
4. Sirikanjanapong S, Melamed J, Patel RR. Intraepidermal and dermal Merkel cell carcinoma with squamous cell carcinoma in situ: a case report with review of literature. J Cutan Pathol 2010; 37(8):881-85.
5. Walsh NM. Primary neuroendocrine (Merkel cell) carcinoma of the skin: morphologic diversity and implications thereof. Hum Pathol 2001;32(7):680-89.

6. Park HC, Kang HS, Park KT, et al. Merkel cell carcinoma concurrent with Bowen's disease. Ann Dermatol 2012;24(1):77-80.
7. Hanna GS, Ali MH, Akosa AB, Maher EJ. Merkel-cell carcinoma of the pinna. J Laryngol Otol 1988;102(7):608-11.
8. Vieites B, Suárez-Peñaranda JM, Delgado V, et al. Merkel cell carcinoma associated with in situ and invasive squamous cell carcinoma. Acta Derm Venereol 2009;89(2):184-6.
9. Rohaizak M, Meah FA, Norlia A, et al. Merkel cell carcinoma on pre-existing Bowen's disease of the nipple in a patient with chronic arsenic poisoning: is it incidental? Asian J Surg 2001;24(1):58-60.
10. Schenk P, Konrad K. Merkel cell carcinoma of the head and neck associated with Bowen's disease. Eur Arch Otorhinolaryngol 1991;248(8):436-41.
11. Al-Ahmadie HA, Mutasim DF, Mutema GK. A case of intraepidermal Merkel cell carcinoma within squamous cell carcinoma in-situ: Merkel cell carcinoma in-situ? Am J Dermatopathol 2004;26(3):230-33.
12. Busam KJ, Jungbluth AA, Rekthman N, et al. Merkel cell polyomavirus expression in merkel cell carcinomas and its absence in combined tumors and pulmonary neuroendocrine carcinomas. Am J Surg Pathol 2009;33(9): 1378-85.
13. Andea AA, Coit, DG, Amin B, Busam KJ. Merkel cell carcinoma: histologic features and prognosis. Cancer 2008;113(9):2549-58.