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CASE REPORT

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Facial Merkel cell carcinoma in a 92-year-old man: A case report

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Key Clinical Message

Merkel cell carcinoma (MCC) is a rare and aggressive skin cancer that can be easily misdiagnosed in its early stages. Clinicians should maintain a high index of suspicion for rapidly growing skin lesions in elderly patients and promptly investigate with histopathology and immunohistochemistry. Treatment for MCC should be individualized, considering the patient's age, overall health, and quality of life. Close follow-up is essential to detect recurrence or metastasis early.

KEYWORDS

elderly patients, individualized treatment, Merkel cell carcinoma, misdiagnosis, prognosis

1 | INTRODUCTION

Merkel cell carcinoma (MCC) is a rare and highly malignant tumor characterized by neuroendocrine differentiation. The etiology of MCC remains unclear, and there is ongoing debate about its cellular origin. Although clinically uncommon, MCC is characterized by its aggressive behavior and predilection for sun-exposed areas, particularly the head, face, and extremities of the elderly. The atypical early presentation of MCC often leads to misdiagnosis as benign skin lesions, resulting in delayed initiation of treatment. Histopathological examination and immunohistochemistry remain the gold standard diagnostic modalities for MCC. While surgical excision is the preferred treatment approach, elderly patients often present with poor general health and limited tolerance for invasive procedures, posing significant challenges to treatment decision-making. This article reports on the diagnosis and management of a 92-year-old man with facial MCC and explores individualized treatment strategies for elderly patients with this rare malignancy.

2 | CASE PRESENTATION

A 92-year-old male patient presented with a left eyebrow mass of 6 months' duration. The lesion initially presented as a skin-colored mass approximately 0.5 cm in diameter in the middle of his left eyebrow, causing no discomfort. After 3 months, however, the mass grew rapidly to

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approximately 1.5 cm in diameter, with the surface gradually becoming purplish red and slightly raised, and the patient was referred to another hospital where it was initially thought to be a cyst. A biopsy was recommended to confirm the diagnosis, followed by surgical excision of the mass. However, the patient chose not to proceed with further diagnostic work up or treatment and did not comply with follow-up recommendations. In the month prior to presentation, the lesion had rapidly increased to approximately 3.5 cm in diameter, with obvious protrusion and occasional bleeding on palpation. Physical examination revealed a brown, raised, cauliflower-like neoplasm measuring approximately 3.5 cm × 3.5 cm on the left eyebrow with a visible black crust (Figure 1). There was no evidence of enlargement of the superficial lymph nodes throughout the body.

3 | METHODS AND RESULTS

Auxiliary examinations showed no significant abnormalities in routine blood counts, biochemistry, and tumor markers, while chest CT suggested chronic bronchitis and emphysema, and head CT showed multiple lacunar cerebral infarcts. Histopathology of the skin lesion showed tumor cells infiltrating the dermis and subcutaneous fat in both nested and sheet-like patterns with vacuolated nuclei, sparse cytoplasm, and abundant mitotic figures. Immunohistochemical staining revealed positive expression of CK20, CgA, AE1/3, Syn, and a high proliferative index of Ki67 (80%+). However, the tumor cells were negative for CK7, HMB45, TTF1, LCA, CK5/6, and S-100 (Figure 2). The combination of clinical manifestations, histopathology, and immunohistochemistry results led to the diagnosis of Merkel cell carcinoma.

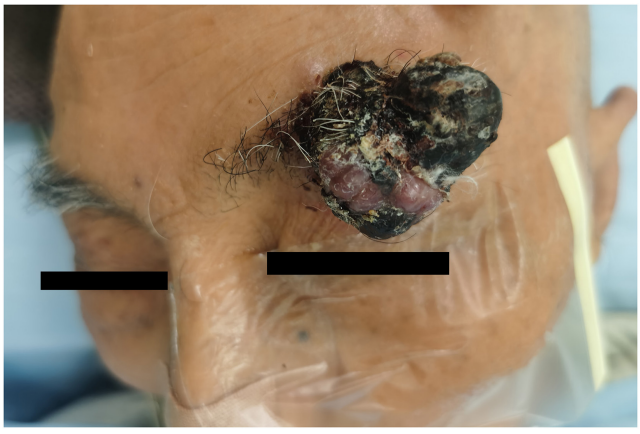

FIGURE 1 Clinical presentation of MCC. A brown, raised, cauliflower-shaped tumor, on the left eyebrow with a visible black crust.

The patient underwent modified Mohs micrographic surgery to excise the tumor with a margin of 1 cm from the edge of the lesion and to a depth of 1 cm. Histopathological examination of the excised margin and underlying tissue revealed no tumor cells in any of the specimens submitted. Given the patient's advanced age and limited physical tolerance, the family declined pathological examination of the sentinel lymph nodes and further staging tests such as computed tomography (CT), magnetic resonance imaging (MRI), or positron emission tomography-computed tomography (PET-CT). The family also decided against post-operative radiotherapy. At 3 months, there was no evidence of recurrence. However, close long-term monitoring is essential to detect any recurrence or metastases at an early stage.

4 | DISCUSSION

MCC is a rare, highly aggressive cutaneous malignancy with neuroendocrine differentiation that predominantly affects sun-exposed areas in the elderly.[1] The early clinical presentation of MCC is often non-specific, leading to frequent misdiagnosis. In this case, the patient was initially misdiagnosed as having a cyst, a common occurrence in clinical practice. Atypical early symptoms, insufficient awareness, and lack of vigilance among clinicians are major contributors to the misdiagnosis of MCC as benign skin lesions or non-melanoma skin cancers, resulting in delayed diagnosis and treatment. Therefore, clinicians should increase their awareness of MCC and maintain a high index of suspicion for rapidly growing nodular skin lesions on the face in elderly patients.

In patients with suspected MCC, prompt histopathological examination coupled with immunohistochemical staining remains the diagnostic gold standard and is crucial in differentiating MCC from other small round cell tumors.[2] Characteristic histopathological findings include nests and sheets of tumor cells with vesicular nuclei, sparse cytoplasm, and frequent mitotic figures. Positive expression of neuroendocrine markers such as CK20, synaptophysin, and chromogranin A on immunohistochemistry supports the diagnosis of MCC.[3] In this case, the patient's histopathological and immunohistochemical findings were consistent with MCC.

The gold standard treatment for MCC is complete excision of the primary lesion with histologically negative margins. Modified Mohs micrographic surgery is an ideal technique for excising MCC, as it ensures complete tumor removal while minimizing the loss of normal tissue and reducing the complexity of wound repair. Given the high risk of occult lymph node involvement in MCC, sentinel lymph node biopsy (SLNB) or imaging is recommended

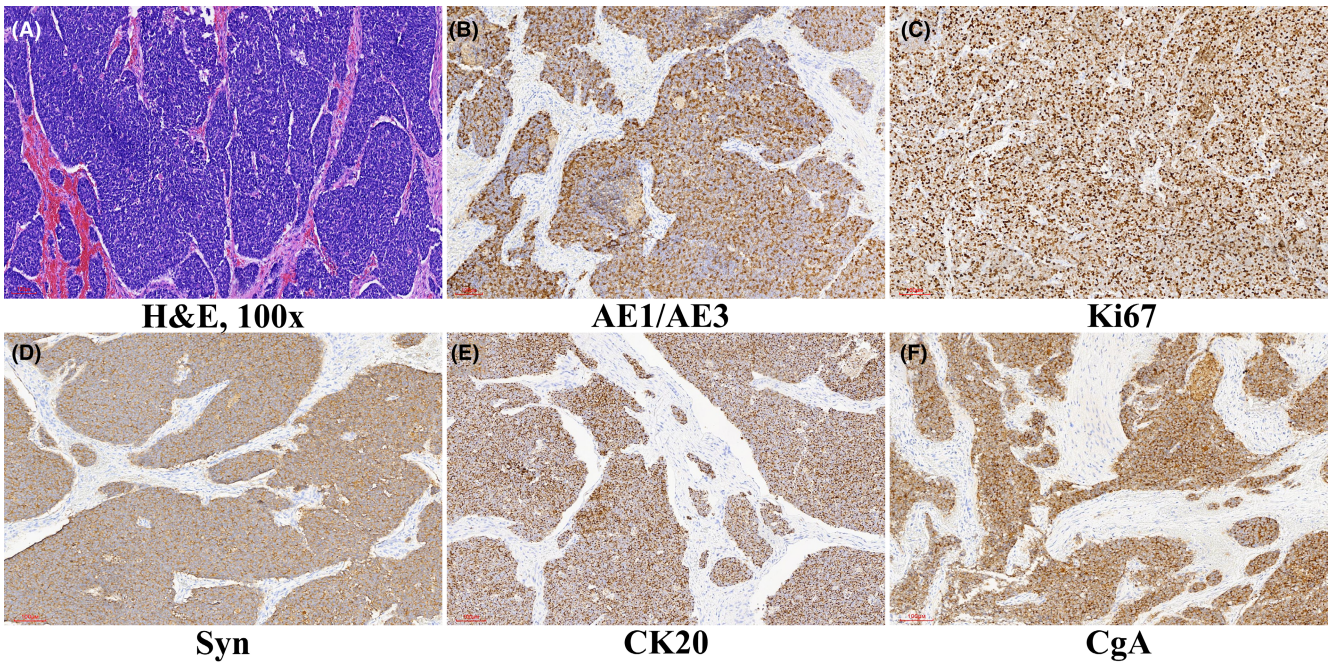

FIGURE 2 Histopathological and immunohistochemical characteristics of MCC. (A) Cytomorphology of MCC showing round nuclei, sparse cytoplasm, salt-and-pepper chromatin, indistinct nucleoli (H&E stain, 100×). (B) Strong cytoplasmic positivity for pan-cytokeratin (AE1/3) (100×). (C) Ki67 proliferation index (80%+) (100×). (D) Diffuse cytoplasmic positivity for synaptophysin (Syn) (100×). (E) Strong positivity for cytokeratin 20 (CK20) staining (100×). (F) Cytoplasmic granular positivity for chromogranin A (CgA) (100×).

prior to definitive treatment. If regional lymph node involvement is confirmed, the standard approach is thorough lymph node dissection followed by adjuvant radiotherapy.[4] However, treatment decisions for elderly MCC patients with poor general health and limited surgical tolerance to surgery can be challenging. An individualized treatment strategy should be developed by carefully weighing the benefits and risks of surgery, taking into account the patient's overall condition, comorbidities, and quality of life. In the present case, the 92-year-old patient with significant comorbidities, including chronic bronchitis, emphysema, and multiple lacunar cerebral infarcts, underwent local excision without lymph node dissection, radiotherapy, or chemotherapy. This decision reflects the principle of individualized treatment, taking into account the patient's advanced age and frailty due to comorbidities.

In recent years, immunotherapy has emerged as a key treatment for advanced MCC. Immune checkpoint inhibitors, such as pembrolizumab and avelumab, have shown promising results in improving overall survival and progression-free survival in patients with metastatic MCC.[5] However, immunotherapy is associated with potentially serious adverse events, including colitis, pneumonitis, and endocrinopathies. In elderly patients with complex health profiles and multiple comorbidities, the risk–benefit ratio of immunotherapy must be carefully assessed. In our case, considering the patient's advanced age, frailty, existing comorbidities, and economic factors, we determined that the potential risks of immunotherapy outweighed its benefits.

Despite personalized treatment, the overall prognosis of MCC remains guarded due to high recurrence rates. Advanced age, male gender, head and neck primary tumor and immunosuppression are known to be poor prognostic factors.[6] In addition to the known prognostic factors, advanced stage and socioeconomic deprivation are also considered important factors influencing the prognosis of Merkel cell carcinoma.[7] In the present case, the patient's advanced age, facial primary tumor, and uncertain lymph node status together suggest an unfavorable prognosis. Surgical excision followed by adjuvant radiotherapy is recommended to minimize the risk of recurrence and optimize disease control. However, in the event of patient refusal of SLNB and radiotherapy, it is essential that clinicians undertake thorough risk communication with patients and their families. A detailed explanation of the potential benefits, risks, and prognostic implications of each treatment option should be provided to facilitate informed decision-making. In the absence of SLNB information, alternative prognostic factors such as primary tumor size, depth of invasion, and presence of lymphovascular invasion should be carefully evaluated to assess the patient's risk of regional and distant metastases. In addition, close clinical follow-up with regular physical examinations and imaging studies is essential to detect early signs of recurrence or metastasis. By incorporating these

strategies, clinicians can optimize individualized management plans for elderly MCC patients while respecting their treatment preferences and quality of life.

5 | CONCLUSION

Clinicians should be aware of MCC and promptly investigate suspicious lesions with histopathology and immunohistochemistry. Early stage MCC is preferably treated with surgical excision and lymph node evaluation, supplemented by adjuvant radiotherapy and chemotherapy. For elderly MCC patients, individualized treatment principles with an emphasis on quality of life should be followed. Further long-term, prospective, multicenter studies are warranted to provide high-quality evidence to optimize management strategies in elderly MCC patients.

AUTHOR CONTRIBUTIONS

Zhiqiang Zhang: Conceptualization; data curation; formal analysis; investigation; methodology; writing – original draft. **Weiwei Shi:** Conceptualization; data curation; methodology; software; writing – original draft. **Ruzhi Zhang:** Funding acquisition; project administration; resources; supervision; validation; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors report no conflicts of interest in this work.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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