CASE REPORT: MERKEL CELL CARCINOMA OF THE FINGER FOLLOWING A CHEMICAL BURN

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Introduction

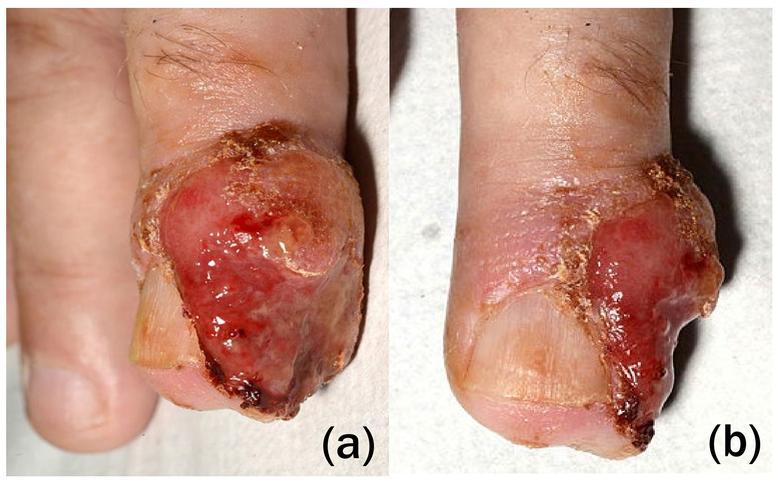
- This case report describes a rare presentation of Merkel cell carcinoma (MCC) with co-existing invasive Squamous cell carcinoma (SCC) at the site of a previous chemical burn injury.
- Currently there are no other recorded cases of MCC post burn in the literature.

Key learning points

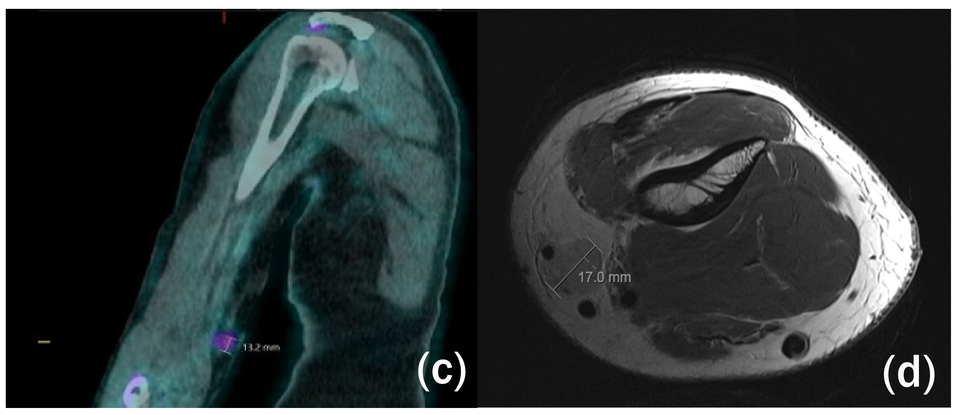
- Biopsy should be considered in all chronic, non-healing wounds.
- Marjolin ulcers are predominantly SCC, occurring in up to 1-2% of burns cases.
- The chemical agent involved may provide clues as to the pathophysiological processes in MCC or the findings may be unrelated.

Case highlights

- 63-year-old right hand dominant male referred from primary care to the burns service for assessment of a non-healing wound to the distal left ring finger (a) and (b).
- Sustained a mild occupational chemical burn to the same area 10 months prior with an unknown cleaning liquid. Splashed on the finger despite wearing protective equipment. The injury was managed conservatively.
- No personal or family history of skin cancer. Performance status 0.
- Biopsy confirmed MCC with co-existing invasive SCC. Underwent amputation of the left ring finger at the proximal interphalangeal joint.
- Fine needle aspiration confirmed metastatic MCC in the left axilla and left forearm following PET-CT (c) and MRI (d).
- Underwent left axillary dissection and excision of forearm nodule. Concern clinically for recurrence at the ring finger.
- Due to complete course of radiotherapy to left elbow and left axilla under the care of Oncology. MDT decision to continue with PET-CT on a 4-monthly basis due to high risk, recurrent disease.



(a) and (b) Distal left ring finger non-healing wound 10 months post chemical burn. Subsequently biopsied and confirmed MCC. Shared with permission.



(c) PET-CT tracer avid lymph nodes left axilla and left antecubital fossa, indeterminate area proximal radius.
(d) Transverse plane MRI distal forearm with pathologic supratrochlear node.

Merkel cell carcinoma

MCC is a rare and aggressive neuroendocrine tumour of the skin with a 5-year survival rate of 50%. Merkel cells are mechanoreceptors responsible for light touch sensation originating from the basal layer of the epidermis.

Previously Merkel cells were believed to be the origin of MCC, although current evidence suggests MCC originates from abnormal precursor cells, likely early B-cells, as opposed to malignant transformation of a Merkel cell. This supported by a number of factors, including MCC being found in the dermis and subcutaneous tissue.

Risk factors for MCC include:

- ultraviolet (UV) exposure,
- immunosuppression
- age over 50 years old. At presentation there are high rates of metastatic disease and lymph node involvement. Diagnostic work up usually involves PET-CT and biopsy. Treatment comprises surgical resection and consideration of radiotherapy.

The pathogenesis of MCC is not fully understood, however Merkel cell polyomavirus (MCPyV) has been reported in up to 80% of cases and is likely a pre-cursor to oncogenesis.

Skin cancer and burns

MCC is known to co-exist with skin malignancies, including SCC, although there are currently no cases in the literature reporting MCC following a burn injury.

Marjolin ulcers are predominantly histological SCC occurring at a scar site, most commonly the site of a previous burn injury, affecting roughly 1-2% of burn cases. Usually Marjolin ulcers develop several years post injury, although there are cases of acute Marjolin ulcers occurring within one year of injury. Delayed wound healing at the time of initial insult is a risk factor.

The chemical agent involved in the primary insult may provide insight as to the pathophysiological process that occurred for MCC to develop following a burn injury. A number of processes are likely attributable. The necrotic processes occurring post-alkali and -acid burns to denature proteins may mimic the action of noxious stimuli to create hostile cellular environments and result in DNA damage. Damage to the tissue on a cellular level may allow for easier infiltration of MCPyV, or accelerate damage caused by previous UV exposure. It is also possible that the findings are unrelated.

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