Cutaneous Cytomegalovirus Infection: A Case of Disseminated Skin Ulcers

Hanae Benchbani, M.D.; Ishaq Asghar, M.B.B.S.; Ruifeng Guo, M.D., Ph.D.

Department of Laboratory Medicine & Pathology, Mayo Clinic, Florida

Introduction

Cytomegalovirus (CMV) is a ubiquitous herpesvirus that typically remains dormant in healthy individuals, but it can reactivate in immunocompromised hosts, leading to significant morbidity. While systemic CMV infections are well documented, cutaneous involvement is rare and often overlooked. Cutaneous CMV can present as ulcers, rashes, or nodules, which may resemble other dermatological conditions, such as pyoderma gangrenosum or Stevens-Johnson syndrome (SJS). Due to the overlapping clinical and histopathological features, accurate diagnosis depends on meticulous histological evaluation and immunohistochemical confirmation of CMV inclusion bodies.

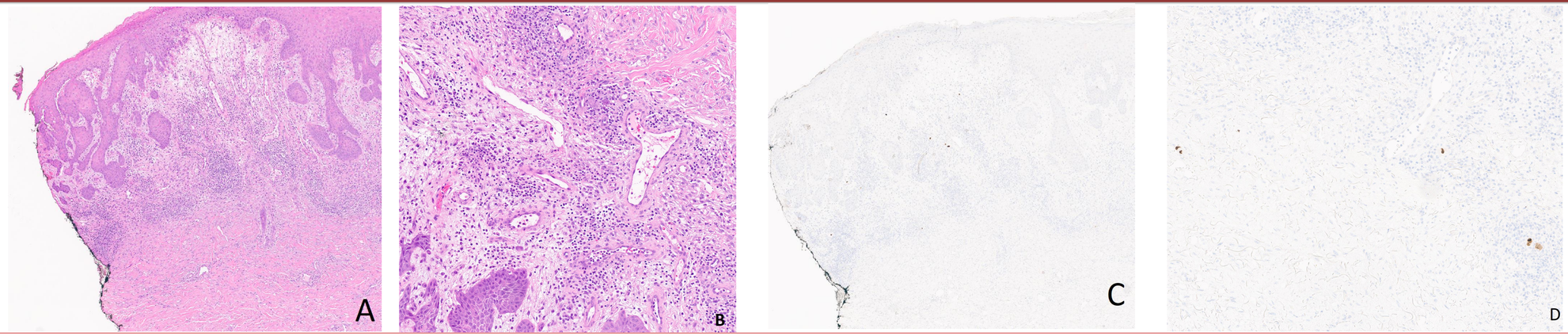
Case Description

We report the case of a 61-year-old male with multiple cutaneous lesions located on the extremities and torso. The patient had a recent diagnosis of a left frontal brain mass, which was pathologically assessed as "reactive gliosis with areas of organizing suppurative abscess formation." Biopsies were obtained from three distinct sites: the right wrist, right arm, and right axilla.

Results

Histopathological analysis and immunohistochemical staining for Herpes Simplex Virus (HSV), Varicella-Zoster Virus (VZV), and CMV were performed. Hematoxylin and eosin (H&E) staining revealed ulceration, mixed inflammatory infiltrates, epidermal necrosis, and evidence of healing changes. Histologically, these findings are non-specific and can be seen in a variety of inflammatory or reactive dermatologic conditions. However, careful examination of the tissue samples identified scattered viral inclusions, predominantly within vascular structures. These inclusions were characteristic of CMV and were confirmed by positive immunohistochemical staining for CMV antigens. The critical diagnostic challenge lies in differentiating these viral inclusions from the nonspecific inflammatory and reactive changes that frequently accompany cutaneous ulcers. Given the patient's concomitant history of a brain abscess and the multifocal nature of the skin lesions, a disseminated CMV infection was strongly suspected. This highlights the necessity of a thorough clinical evaluation and histopathological scrutiny in diagnosing CMV in immunocompromised individuals.

Figures



H&E slides lower power (A) shows cutaneous ulcer with mixed inflammation and healing changes, higher power (B) shows scattered large nucleus with basophilic intranuclear inclusions distributed in a vascular pattern. Immunohistochemistry for CMV (C, D) is positive in the infected cells.

Conclusion

This case underscores the importance of considering CMV as a potential cause of unusual skin ulcers, particularly in immunocompromised patients. Histologically, cutaneous CMV presents with non-specific features, such as ulceration and inflammatory changes, which can overlap with other conditions. However, careful examination for CMV inclusion bodies, combined with immunohistochemical confirmation, is crucial for accurate diagnosis. The findings in this case suggest a disseminated CMV infection, emphasizing the need for comprehensive systemic evaluation and appropriate therapeutic management in such patients.

References

- Mona Deerwester, Lisa R. Rothman, Nooshin K. Brinster, Pustulonodular cytomegalovirus infection, Human Pathology: Case Reports, Volume 22, 2020, 200426, ISSN 2214-3300, https://doi.org/10.1016/j.ehpc.2020.200426.(https://www.sciencedirect.com/science/article/pii/S2214330020300754)
- Resnik KS, DiLeonardo M, Maillet M. Histopathologic findings in cutaneous cytomegalovirus infection. Am J Dermatopathol. 2000 Oct;22(5):397-407. doi: 10.1097/00000372-200010000-00003. PMID: 11048974.
- Resnik, Kenneth S M.D; DiLeonardo, Mario M.D; Maillet, Matt M.D. Histopathologic Findings in Cutaneous Cytomegalovirus Infection. The American Journal of Dermatopathology 22(5):p 397-407, October 2000.