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Interesting Images

# Individual Keratinocyte Necrosis in the Epidermis Includes Apoptosis in the Skin: A Case Report.

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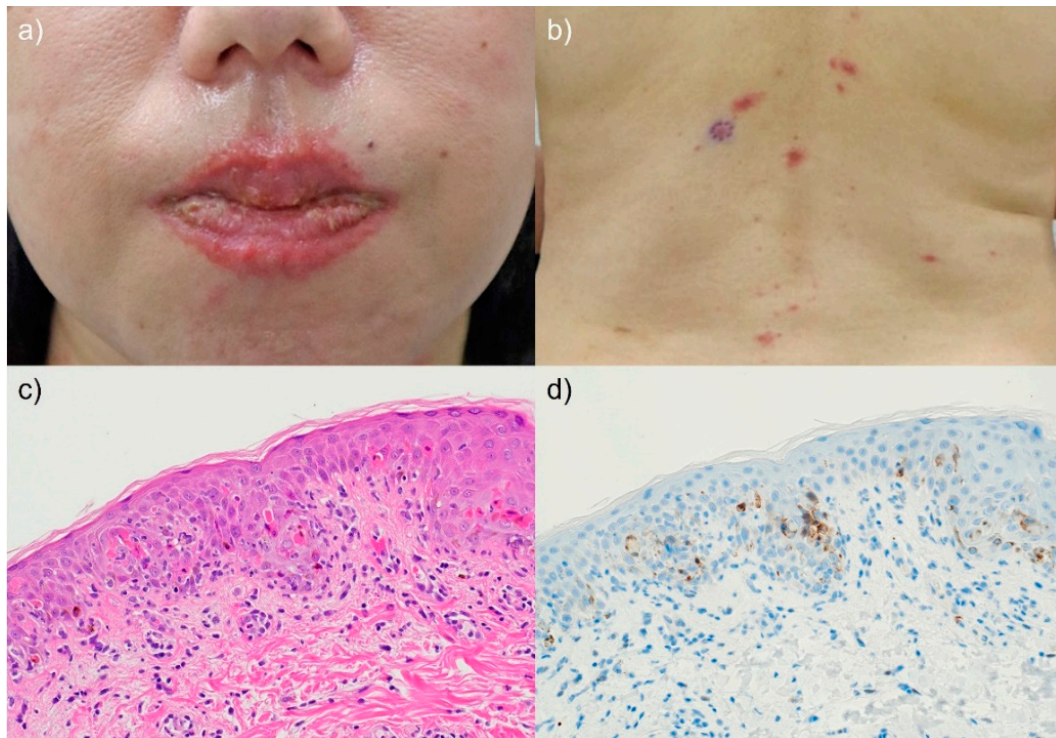
**Abstract:** The patient was a 44-year-old woman with suspected Stevens-Johnson syndrome due to Baktar<sup>®</sup> (sulfamethoxazole trimethoprim) medication received at our outpatient dermatology clinic. Histopathologically examining the epidermis, dermis, and subcutaneous adipose tissue samples showed numerous necrotic keratinocytes in the epidermis. Apoptotic nuclei were visualized as diaminobenzidine brown deposits with immunoperoxidase staining for cleaved caspase-3. Cleaved-caspase3-positive findings were consistent with eosinophilic material that appeared to be necrotic cells within the epidermis. Therefore, these eosinophilic materials must be apoptotic bodies. Generally speaking, and especially in Japan, these materials are considered necrotic keratinocytes. To our best knowledge, no studies have used apoptotic immunohistochemical markers to examine whether these structures are apoptotic.

**Keywords:** keratinocyte necrosis; apoptosis; cleaved caspase-3; skin

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The patient was a 44-year-old woman with suspected Stevens-Johnson syndrome due to Baktar<sup>®</sup> (sulfamethoxazole trimethoprim) medication received at our outpatient dermatology clinic.

The patient presented with sores on her lips and mouth (Figure 1a) and erythema of the whole body (mainly on the palms and soles). A 5 mm dermal punch biopsy was taken from erythema on the dorsal surface of her back (Figure 1b). Histopathological examination of the epidermis, dermis, and subcutaneous adipose tissue samples showed numerous necrotic keratinocytes in the epidermis (Figure 1c). Apoptotic nuclei were visualized as diaminobenzidine brown deposits with immunoperoxidase staining for cleaved caspase-3 by using a 1:500-diluted rabbit polyclonal antibody available from Cell Signaling Technology (Danvers, MA, USA) as was described earlier [1]. Cleaved-caspase3-positive findings were consistent with eosinophilic material that appeared to be necrotic cells within the epidermis (Figure 1d). Therefore, these eosinophilic materials must be apoptotic bodies. Generally speaking, and especially in Japan, these materials are considered necrotic keratinocytes [2]. However, *McKee's Pathology of the Skin* and *Weedon's Skin Pathology*[3,4] show these materials as apoptotic keratinocytes. To our best knowledge, no studies have used apoptotic immunohistochemical markers to examine whether these structures are apoptotic.<sup>2,3,4</sup> As reported previously, necrotic keratinocytes can also be a possibility. Further multicenter studies with a more significant number of cases are warranted.



**Figure 1.** (a) Macroscopic findings of the rash on the lip. (b) Macroscopic findings of the rash on the back. (c) Microscopic findings. The epidermis shows numerous eosinophilic unstructured necrotic keratinocytes with exocytosis of small lymphocytes (Hematoxylin and eosin staining). (d) Cleaved-caspase3-positive findings are consistent with eosinophilic amorphous material that appeared to be necrotic cells within the epidermis (cleaved-caspase3 immunostaining).

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