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Clinical practice

Distinction between forensic evidence and dermatological findings

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ABSTRACT

The external examination after death requires knowledge in forensics/pathology, dermatology, as well as associated diseases and age-related alterations of the skin. This article highlights some findings with forensic evidence versus dermatological findings.

The lectures in forensic medicine should be structured interdisciplinarily, especially to dermatology, internal medicine, surgery, pathology, and toxicology in order to train the overlapping skills required for external and internal postmortem examinations.

1. Introduction

The external examination after death requires knowledge in forensics/pathology and a basic training in dermatology[6,7] as well as associated diseases and age-related alterations of the skin; otherwise medico-legal investigations might be biased by misinterpretations.[1] The authors seek to raise awareness of a comprehensive differential diagnosis, not only in forensic medicine but also in other clinical disciplines. The paired images shown in this article highlight some selected findings comparing dermatological findings with forensic evidence. The mimicking of postmortem changes has been described recently.[5] Each finding is dependent on the point at which the image is taken: the similarities or differences between the findings often increase with the passage of time. For this reason, the figures are only examples, representing categories of very complex morphologies that cannot be completely illustrated.

1.1. Pair 1: faces of living middle-aged men, right side

The facial erysipelas (Fig. 1a) displays homogeneous, diffuse coloration and clear zoning corresponding to its stage or the effect of a commenced therapy. By contrast, the hematoma due to blunt force (Fig. 1b) shows characteristic inhomogeneous blue-reddish discoloration and swelling due to alternating bleeding intensities and tissue repair processes.

1.2. Pair 2: orbital region of deceased older women

Amyloidosis with orbital nodules, bleedings, and brownish discoloration due to a long-term effect (Fig. 2a) is a rare manifestation nearly perfectly mimicking bleedings after blunt force (Fig. 2b). The trauma is evidenced by a more reddish color (due to the relatively short time period between the application of force and the examination) and the absence of nodules in comparison with the natural illness.

1.3. Pair 3: foreheads of a living young girl and a living middle-aged man

Only a few cases of Sturge–Weber syndrome as encephalotrigeminal angiomatosis with unilateral facial tender port-wine staining (Fig. 3a) and gray-colored Mongolian spots as congenital birthmarks (Fig. 3c) have been observed in clinical forensic medicine and each time they had the potential for misinterpretations. Compared to hematoma after blunt force (Fig. 3b), they show a consistent coloration which may be brindled or streaked but without any injury of the skin layers and without bleeding.

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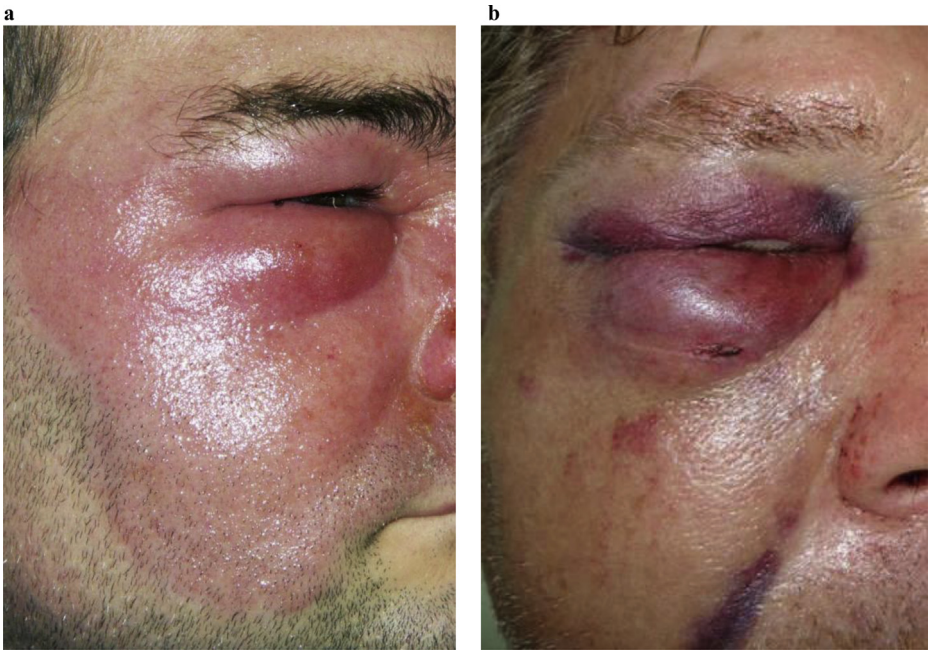

Fig. 1. a. Erysipelas b. Hematoma after blunt force.

1.4. Pair 4: faces of a living middle-aged man and a living young girl, left side

The morphology is very similar to Pair 3. The tender reddish staining in the case of nevus flammeus (Fig. 4a) shows zoning after laser therapy, mimicking hand or finger marks. Compared with Fig. 3b, the blunt force lesion in Fig. 4b shows a more diffuse reddish coloration with swelling. The time course demonstrates the well-known alterations of color and intensity.

1.5. Pair 5: chests of deceased elderly persons

The misinterpretation of mycosis fungoides or cutaneous T cell lymphoma (Fig. 5a) in contrast to thermal effects (Fig. 5b) could lead to the interpretation of crime scene and finding location being nonidentical. In both cases, deep and even bloody lesions penetrate multiple skin layers. The potential severity of both entities might hamper the differential diagnosis. The surrounding reddish coloration together with the well-known degrees of skin alterations after burning, charred hair, and the smell will guide the examiner in the right direction.

1.6. Pair 6: lower arms of deceased elderly persons

Drug abuse is no longer restricted to younger people. Hyperpigmented macules of the skin in senile lentigo (Fig. 6a) are very similar in color and size to the macules we observe most probably as allergic skin reactions following drug abuse (Fig. 6b). After drug abuse by injection, the spots are not always restricted to the surrounding blood vessels and might also appear on the trunk or legs. However, in contrast to senile lentigo they vary slightly in form, color, and size. The fresh macules with erosions make differential diagnosis easy, but the older ones are more difficult to distinguish. It is therefore important to consider several factors before arriving at a differential diagnosis.

Lectures in forensic medicine should be structured interdisciplinarily, with a special focus on dermatology, internal medicine, surgery, pathology, and toxicology in order to train the overlapping skills required for external and internal postmortem examinations. The lack of awareness of side effects of medications and skin alterations after drug abuse[2,3] are shortcomings in police training. In addition, most physicians are not sufficiently trained to recognize the side effects of retrieval situations,[4] simulation of fatal accidents, or suicides. The best way for clarification of dubious

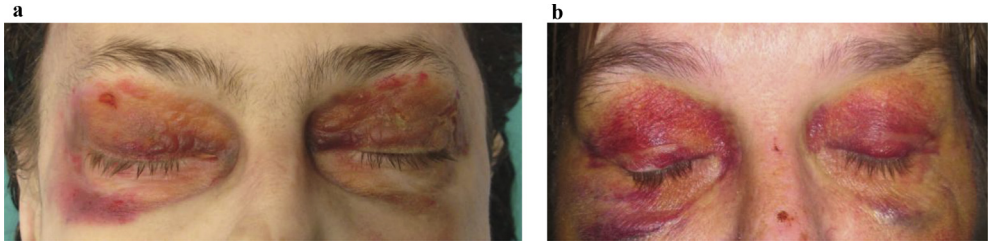

Fig. 2. a. Amyloidosis b. Hematoma after blunt force.