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Chemotherapy-related adermatoglyphia and fingerprint changes in cancer patients: a literature review

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Abstract

Background: Human identification can rely on the biological stability of fingerprints (FP) due to their unique and permanent nature [1]. However, several oncological treatments may compromise this permanence by altering dermal papillary ridges (DPR), undermining the biometric reliability of FP-based identification and causing legal barriers [2]. Various classes of chemotherapeutic agents, including cytotoxics (antimetabolites, alkylating agents, and taxanes), targeted therapies (tyrosine kinase inhibitors), and immunotherapies, have been linked to dermatological adverse effects such as Hand-Foot Syndrome (HFS) and acquired adermatoglyphia [1]. **Objective:** Examine the effects of different chemotherapeutic classes on FP morphology, focusing on changes to DPR and the resulting challenges for forensic identification. **Methods:** A systematic search was performed across PubMed, Scopus, and Web of Science using descriptors such as “chemotherapy”, “adermatoglyphia” and “forensic identification.” Articles were included if they reported alterations in FP patterns due to anticancer therapy ($N=14$). Studies lacking a forensic context or unrelated to human lophoscopic morphology were excluded. **Results:** Chemotherapy-induced fingerprint alterations range from a subtle blurring of ridge definition to a complete loss of dactyloscopic patterns [3]. Although often associated with HFS from antimetabolites or multikinase inhibitors, other drug classes contribute significantly to ridge loss, such as taxanes (e.g., paclitaxel) [1]. Proposed mechanisms involve direct cytotoxic effects on keratinocyte turnover, inflammation of basal epidermal layers, and impaired skin regeneration. While recovery is often observed following treatment interruption, persistent biometric damage has been documented [1]. Data remains sparse regarding prevalence, risk factors, and long-term outcomes. **Conclusions:** Chemotherapy-induced adermatoglyphia represents a significant clinical and legal barrier that demands increased awareness among healthcare and forensic professionals [1-3]. Further investigation is essential to map the incidence, biological mechanisms, and reversibility across different chemotherapeutic classes.

Keywords: chemotherapeutic agents; dactyloscopy; dermal papillary ridges; forensic identification

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