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Impact of capecitabine on fingerprints in oncologic patients: A literature review

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Abstract

Background: Forensic fingerprint (FP) analysis is a key tool for human identification, based on the principles of permanence, variability, and mutability. However, emerging evidence suggests that certain pharmacological treatments, particularly in oncology, may induce alterations in dermal papillary ridges (DPRs), potentially compromising biometric reliability [1]. Chemotherapeutic agents, such as capecitabine (CAP), have been associated with Hand-Foot Syndrome (HFS) and acquired adermatoglyphia. CAP is an oral prodrug of 5-fluorouracil used to treat breast, colorectal, and pancreatic cancers, with HFS as its most characteristic adverse effect [2]. **Objective:** This study aims to review the literature on the impact of CAP on FP patterns in oncologic patients, focusing on DPRs alterations and underlying pathophysiological mechanisms relevant to forensic identification. **Methods:** A literature review was conducted using scientific databases, including PubMed, Scopus, and Web of Science. The search strategy included the following keywords: “capecitabine”, “fingerprints”, “dermatoglyphics”, “adermatoglyphia”, “hand-foot syndrome”, and “forensic identification”. Inclusion criteria comprised original articles and case reports, addressing dermatological toxicity and/or FP alterations associated with CAP therapy. Exclusion criteria included studies not involving capecitabine and non-human studies. **Results:** Dermatoglyphic alterations may range from reduced DPRs clarity to complete loss of FP patterns (acquired adermatoglyphia) [3]. These changes are often associated with HFS but may occur independently. Some cases appear reversible after treatment discontinuation, although persistent alterations have been reported. Evidence remains limited, particularly regarding longitudinal follow-up. CAP is frequently implicated, possibly due to local effects on keratinocyte proliferation and skin integrity [1]. **Conclusions:** CAP-related FP alterations are an emerging and clinically relevant issue, potentially affecting patients’ quality of life and challenging FP-based identification in forensic contexts [1-3]. Further research is needed to clarify mechanisms, prevalence, and reversibility.

Keywords: anticancer drugs; dermal papillary ridges; forensic sciences; lophoscopy; oncology

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