

# TOXICOLOGY 1 - POSTERS

## DERMATOLOGIC CONDITIONS IN DIOXIN INTOXICATION INCLUDING PUNCTATE KERATODERMA-LIKE LESIONS ON THE PALMS AND SOLES, A NEW CLINICAL MANIFESTATION?

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### Introduction

Chloracne is the most prominent skin manifestation in humans intoxicated with polychlorinated compounds, of which 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) is considered one of the most potent chloracnogens<sup>1</sup>. Symptoms of intoxication including the skin manifestations have been extensively studied after tragic mass exposures such as the Seveso incident in 1976 when a trichlorophenol (TCP) production reactor exploded causing exposure to TCDD of several thousands inhabitants<sup>2</sup>, and the accident at the TCP production unit at the BASF in Ludwigshafen, Germany, in 1953, where more than 200 persons were directly or subsequently contaminated with TCDD<sup>3,4</sup>. As a consequence, in a subset of people, chloracne occurred, which was studied clinically and histologically<sup>5,6</sup>. Here we report about a woman severely intoxicated with TCDD, whose skin manifestations included punctate keratoderma-like papules on the palms and soles, a novel condition never been described before in connection with TCDD exposure.

### Materials and Methods

Due to presumably oral intoxication with TCDD, a 30-year old woman developed severe chloracne in spring 1998<sup>7</sup>. Closed and opened comedones, deep inflammatory cysts involved nearly every single follicle, including areas of the skin normally not affected in patients with common acne, such as the auricular area, eyelids, genital area and limbs. 'Healing' of these follicular lesions resulted in atrophoderma vermiculata-like scarring. In addition, there were flattening of the nails and granuloma anulare-like lesions on the dorsum of the toes and fingers present. In the time course of a year, the patient developed hyperpigmentation in the face, hypertrichosis on the limbs, and numerous painful, keratotic, warty-like papules on the soles, and to a lesser extent, on the palms became apparent. The clinical differential diagnoses included common warts, corns, palmoplantar porokeratosis, arsenic keratoses, basal cell nevus syndrome, as well as keratosis punctata palmaris et plantaris (KPPP). A punch biopsy from one of the plantar lesions for histopathology, and a swab for detection of human papillomavirus (HPV) sequences by the polymerase chain reaction (PCR) method<sup>8</sup> were obtained.

### Results and Discussion

The absence of PCR-detectable HPV sequences ruled out an associated skin manifestation, e.g. common warts. There was a negative history of arsenic intake. By histology, the lesions showed an orthokeratotic, partly parakeratotic plug deeply invaginating into the underlying

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dermis without penetrating the epidermis. In the periphery of the lesion there was a cork-screw like appearance resembling an akrosyringium, and keratinisation within the duct of the eccrine sweat gland.

Clinical and histopathological morphology fit the criteria defining KPPP<sup>9,10</sup>. It has been hypothesized that this cutaneous entity represents an abnormality in keratinisation of the cells in the intradermal sweat duct unit<sup>10,11</sup>. For KPPP an autosomal dominant inheritance pattern has been observed, however, sporadic cases and an association with an internal malignancy have been reported<sup>9,11,12</sup>. For our patient, in analogy to the fate of the sebaceous glands for the development of chloracne, it can be suggested that squamous metaplasia of the eccrine sweat glands took place resulting in these hyperkeratotic palmoplantar plugs. Squamous syringometaplasia has been reported in association with TCDD exposure in Seveso victims, however in clinically different conditions<sup>5,6</sup>. Until now, there is only a single report about palmoplantar keratoderma in association with exposure to chloracnegenes, which, however, was clinically completely different<sup>13</sup>. This is the first report where KPPP has been observed in a patient with TCDD intoxication, and a causally involvement of TCDD can be postulated.

## Acknowledgments

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