Chronic Tattoo Reactions Cause Reduced Quality of Life Equaling Cumbersome Skin Diseases

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Abstract

Tattoos are often associated with mild complaints, but some people develop complications that may require medical treatment, and the burden of these events has hitherto been neglected. To understand the dimensions and the psychological symptomatology of adverse events both the sensory and affective impacts, including the effect on quality of life, should be studied. Itch severity and influence on quality of life can be measured objectively. The Itch Severity Scale and Dermatology Life Quality Index scoring systems have been applied to different dermatological diseases. When ISS and DLQI scores were applied to patients with chronic tattoo reactions, tattoo complaints and impact on quality of life that were comparable to patients presenting cumbersome dermatological disease such as psoriasis, eczema and pruritus, which often show widespread effects to the skin, were uncovered. In conclusion, chronic tattoo reactions should be ranked as a cumbersome dermatological disease and, accordingly, given priority attention and qualified treatment by the public health care system.

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Introduction

Signs and symptoms of tattooed skin deviating from normal skin may be mild and acceptable, i.e. at the level of complaint or, when more severe and cumbersome, considered a complication, both of which may require medical treatment. The concept of disease goes beyond the objective signs and findings; it also includes the subjective experience and its influence on patients' lives.

Itch, stinging and pain are the most frequent reported tattoo complaints [1, 2]. Sun-induced reactions, especially in dark colours, are reported in one of five tattooed individuals, with swelling and itching being the most frequent complaints.

The chronic complications are dominated by allergic reactions, which may develop within weeks, months or years. Allergic reactions especially occur in red tattoos. Patients presenting clinically with allergic reactions are patch tested with common allergens, textile dyes, a battery of suspect tattoo ink stock products and their individual suspect inks, all

of which result in an overall negative outcome [3]. The putative allergens are not directly present in the ink stock products but are formed inside the dermis over a longer period.

In this chapter, we will review the subjective symptoms associated with chronic tattoo complaints, i.e. reactions when the tattooed person may seek help from a medical professional. How do these symptoms intrude on patients' lives? What effects do they play on quality of life?

Measurements of Itch and Quality of Life

Different methods are employed to measure the burden of disease and the impact on quality of life. In the field of dermatology, the Itch Severity Scale (ISS) and the Dermatology Life Quality Index (DLQI) are mainly used.

The ISS is a questionnaire designed for the patient [4]. It was devised by Majeski et al. [5] to measure both the sensory and the affective dimensions of itch and is composed of the following 7 topics:

(1) description; (2a) sensory; (2b) affective; (3) body area; (4) intensity; (5) effect on mood; (6) effect on sexual desire/function, and (7) effect on sleep.

DLQI, which was introduced by Finlay and Khan, is a questionnaire including the following topics and elements. (1) and (2): Symptoms and feelings; (3) and (4): daily activities; (5) and (6): leisure; (7): work and school; (8) and (9): personal relationships, and (10): treatment [6, 7].

Both scoring systems are self-explanatory and can easily be completed by an adult patient. They have also both been evaluated on dermatological patients and concluded to be valid [8, 9]. Higher scores in the ISS and DLQI systems indicate a greater impact on the patients' lives. By utilizing the same methods for interpreting patients' experiences with disease, a comparison of different disease populations can be performed and the best therapy can be implemented.

Skin Disease and Quality of Life

Itch is a great burden for many dermatological patients influencing their psyche and, thereby, their ability to cope with disease. The ISS has been used to evaluate patients with pruritus, genital pruritus and nephrogenic pruritus as well as atopic dermatitis, psoriasis and urticaria [5, 8], which revealed ISS scores from 7.4 to 13.4 (table 1). Besides intensive itching, the patients also experienced depressive symptoms, anxiety and sleep impairments, which in some cases had a substantial effect on their daily life.

The DLQI has also been utilized on patients with hand eczema, pruritus and neurodermatitis and has demonstrated a moderate effect on patients' lives [4, 10, 12]. Psoriasis and atopic dermatitis have a big effect on patients' lives (table 1) [11–14].

Tattoo Complications and Quality of Life

Patients with tattoo reactions were often reported to experience itch/stinging at an extreme level when at its worst that commences all hours of the day (morning/afternoon/evening/night) [15].

Patients with tattoo reactions revealed an average ISS score of 7.2, with a range from 0 to 21 [15]. The influence of itch is presented in figure 1.

Itch was associated with concern in 48% of cases, irritation in 18% of cases, depression in 20% of cases, anxiety in 43% of cases, and concentration problems in 48% of cases. Itch also affected patients' sleep, ranging from problems falling asleep to sleep disturbance.

Interestingly, the grade of the symptom was independent of the size of the afflicted area.

The average DLQI score was 7.4 [15]. Tattoo problems had a moderate effect on patient's quality of life, and the results of the influence of tattoos on daily living are presented in figure 2. Symptoms and feelings had the greatest impact

Fig. 1. The extent of tattoos causing itch, measured by the Itch Severity Scale (ISS).

Table 1. Dermatological diagnoses scored by the Itch Severity Scale (ISS) and the Dermatology Life Quality Index (DLQI)

Diagnoses	DLQI score, in total	ISS, in total	Number of participants (n)	Reference
Hand eczema	8.0	–	416	Agner et al. [10]
Pruritus	8.8	–	40	Zachariae et al. [4]
	–	9.7	83	Zachariae et al. [8]
		7.4	93	Majeski et al. [5]
Genital pruritus	–	8.6	12	Zachariae et al. [8]
Nephrogenic pruritus	–	8.5	11	Zachariae et al. [8]
Atopic dermatitis	–	9.5	20	Zachariae et al. [8]
	10.7		415	Kim et al. [11]
Neurodermatitis	9.34	–	150	An et al. [12]
Psoriasis	13.32	–	250	An et al. [12]
	–	7.5	20	Zachariae et al. [8]
	13.1	–	57	Karelson et al. [13]
	10.0		250	Tang et al. [14]
Urticaria	–	13.4	20	Zachariae et al. [8]

on patients' lives, including itching, soreness, pain and/or stinging symptoms. More than half of the patients experienced varying degrees of embarrassment/self-consciousness due to their tattoo reactions. Tattoo reactions also influenced

daily activities, e.g. housekeeping in 38% of cases, choice of clothing in 53% of cases and leisure, e.g. sport activities, in 40% of cases. Personal relationships, including sex, were only mildly influenced (13%).

Fig. 2. Tattoos' influence on daily living, measured by the Dermatology Life Quality Index (DLQI).

Conclusion

Patients with chronic tattoo reactions are heavily burdened by itch, while stinging and pain have a moderate impact on their daily lives. The ISS and DLQI scores are comparable to those of cumber-

some and widespread dermatological diseases, e.g. psoriasis, eczema and chronic pruritus. Chronic tattoo reactions should be ranked as a cumbersome dermatological disease and given priority attention and qualified treatment by the public health care system.

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