Case Report

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Exploring the Relationship Between Ichthyosis and Scalp Paresthesia: Potential Connection and Treatment Approach with Fluocinolone

Elizabeth Tchernogorova [1,*], Parker Miller [1], Olnita Martini [2], Ryan Cox [1], Nicole Skala [1], Mary Tidwell [1], Danielle Duffle MS [2] and Benjamin Brooks [1]

[1] Rocky Vista University College of Osteopathic Medicine, Ivins, UT, USA
[2] Rocky Vista University College of Osteopathic Medicine, Parker, CO, USA
* Correspondence: elizabeth.tchernogorova@ut.rvu.edu; Tel.: +1 (702) 328-7838

Abstract: Ichthyosis is a genetic skin disorder marked by hyperkeratosis, pruritus, and scaling. This case study explores a potential association between ichthyosis and scalp paresthesia, a symptom not commonly linked with this dermatological condition. In a longstanding history of ichthyosis patients, we detail the therapeutic use of fluocinolone, a synthetic corticosteroid, in managing scalp paresthesia. The effectiveness of fluocinolone in reducing paresthesia episodes underscores its potential as a critical component in the symptomatic treatment of this complex interplay between skin and neurological symptoms. This case prompts a broader discussion on the need for increased awareness and education among healthcare providers regarding the diverse manifestations of ichthyosis. Enhanced understanding and recognition of these associations can lead to improved patient counseling, tailored management strategies, and, ultimately, better quality of life for individuals affected by ichthyosis.

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1. Introduction

Ichthyosis is a group of skin conditions that result in itchy, dry skin with erythema and a scaly appearance [1]. X-linked ichthyosis, which primarily occurs in males, has an estimated incidence of 1 in 6000 male births [2]. Predisposition to inherited X-linked ichthyoses includes a loss of function mutations in the FLG gene, which encodes filaggrin, a protein important in maintaining skin barrier integrity [3]. Ichthyosis is often accompanied by irritating symptoms such as pruritis, lithification blistering, and hair loss. Associated Primary neurologic symptoms include difficulty hearing, impaired cognition, visual impairment, and seizures [4].

Here, we present a case of scalp paresthesia following chronic ichthyosis. Scalp paresthesia is the feeling of paresthesia or numbness along the occiput. While no cure for ichthyosis has been identified, the current treatment focuses on symptom reduction by decreasing size, erythema, thickness, and pruritis through prolonged bathing, skin hydration, retinoids, and fluocinolone [6]. The findings highlight an understanding of potential new associated symptoms of ichthyosis and potential treatments for managing these unique symptoms.

2. Detailed Case Description

A 26-year-old Caucasian male has had ichthyosis since he was five years old, initially diagnosed on his abdomen and the extensor surfaces of both his lower and upper extremities. The condition was managed with daily application of lotion, and his symptoms remained consistent over the years. At 12, he began experiencing scalp paresthesia, described as a tingling sensation. This symptom, which tended to occur primarily in the evenings and was possibly linked to fatigue or stress, prompted

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further medical investigations. However, no new neurological or dermatological disorders were identified, and the paresthesia did not progress or associate with other neurological deficits.

The patient's physical symptoms of ichthyosis gradually regressed after the age of 18 and currently presents with occasional skin irritation after exposure to cold and dry climates, with management of daily lotion application. The patient reports that his skin symptoms, including itching and peeling, are exacerbated by extremely dry conditions, particularly at the onset of winter. These symptoms, however, tend to subside with the application of lotion, which helps manage the scales.

Additionally, the patient experiences scalp paresthesia, typically at the bilateral temporal regions or the back of the occiput. This tingling or "vibratory" sensation often radiates to adjacent areas, including the jaw, the back of the neck, and the crown of the head. The symptoms are most pronounced under dry conditions, suggesting a possible link between environmental factors and the exacerbation of his neurological symptoms. He had never noted ichthyotic scales on his scalp or face, and this vibration feeling appeared independent of his ichthyosis. Despite no ichthyosis on his scalp, he reported paresthesia episodes occurring sporadically between 1/2 times per week or months. Symptoms of paresthesia were also triggered after swimming and exposure to high air conditioning, with each paresthesia episode lasting up to several hours and not subsiding until falling asleep.

During a consultation at the dermatology clinic, the patient reported persistent scalp paresthesia alongside a documented history of ichthyosis. In response, the treating dermatologist prescribed Fluocinolone 0.01%, a topical corticosteroid, as part of the therapeutic regimen to manage the patient's symptoms.

Since starting fluocinolone treatment, the patient has experienced five episodes of scalp paresthesia over six months with no increase in ichthyosis symptoms. Each symptom onset was promptly addressed with the application of fluocinolone, leading to resolution within an hour. The patient reported improved symptoms with conditioning lotion and was prescribed fluocinolone by his dermatologist. Despite concerns with correlating symptoms, no genetic testing had been conducted. The patient continues to use fluocinolone as needed for scalp paresthesia and has reported a dramatic decrease in these episodes' intensity and duration. The patient expressed that his quality of life has increased since starting Fluocinolone treatment, and the anxiety about this undiagnosed paresthesia has decreased due to its now easy management. The patient has not followed up with his dermatologist since beginning treatment.

3. Discussion

The case study highlights a potential link between ichthyosis and scalp paresthesia. Fluocinolone Acetonide, a synthetic corticosteroid, possesses anti-inflammatory and vasoconstrictive properties that decrease the body's inflammatory responses [6]. Its vasoconstrictive effect also contributes to symptom alleviation [6]. Recent literature has documented the efficacy of fluocinolone in mitigating paresthesia associated with paclitaxel (PTX)-induced peripheral neuropathy, a mechanism attributed to enhanced mitochondrial recruitment into the axon [7].

Established associations between neurologic symptoms and ichthyosis have been previously linked to various neurologic disorders [8]. However, a neurologic diagnosis was not established in the current case study, paving the way for a new understanding of ichthyosis with paresthesia. Epilepsy has been reported in cases of ichthyosis, suggesting a potential neurological dimension to the condition [8]. Given this information, the case study could potentially represent a scenario of focal non-motor seizures, with paresthesia being the only clinically recognizable presentation of the neurological symptoms associated with ichthyosis. This underscores the complexity of ichthyosis-related neurological manifestations and highlights the need for a nuanced approach to diagnosis and treatment, especially in cases where neurologic symptoms may be subtle or atypical.

Additional knowledge highlighted in this case study demonstrates using fluocinolone as a treatment protocol for symptom alleviation for scalp paresthesia onset through ichthyosis. This patient's positive response to fluocinolone suggests that fluocinolone has effectively alleviated the symptoms associated with scalp paresthesia in this case. The quick resolution of the paresthesia sensations after applying the topical steroid points to its potential role in managing or mitigating the

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dermatological aspects of the patient's condition. Fluocinolone treatment within this study consisted of a .01% concentration applied to the affected area as needed, and therefore, treatment plans may have to be individualized per patient.

5. Conclusions

This case study sheds light on a potential association between ichthyosis and scalp paresthesia. While the exact mechanism underlying this relationship remains unclear, our findings suggest that fluocinolone, a topical steroid commonly used in treating dermatological conditions, may play a role in alleviating paresthesia symptoms in patients with ichthyosis. The prompt resolution of symptoms following the application of fluocinolone underscores its effectiveness in managing scalp paresthesia in our patients.

Through this case report, the need for additional research in ichthyosis and scalp paresthesia should be examined, and whether a specific genetic link or factor is generating such correlation. Healthcare providers, particularly dermatologists, with patients with scalp paresthesia and ichthyosis, should be educated on the correlation and possible treatment with fluocinolone. Fluocinolone acetonide, a synthetic corticosteroid, will inhibit phospholipase A2 via induction of phospholipase inhibitory proteins, lipocortins [6]. Inhibition of phospholipase A2 prevents the release of arachidonic acid, a precursor to prostaglandins and leukotrienes [6]. The overall effect is decreased edema, capillary dilation, and leukocyte migration [6]. We suspect that fluocinolone acetonide aids in decreasing paresthesia linked to ichthyosis due to its anti-inflammatory nature and vasoconstrictive effects, potentially alleviating nerve compression and paresthesia-associated symptoms. In addition, fluocinolone acetonide has been shown to protect peripheral nerve axons from degeneration when exposed to the chemotherapeutical agent Paclitaxel (PTX) [7]. This neuroprotective effect of fluocinolone acetonide is attributed to its ability to enhance mitochondrial anterograde trafficking within peripheral axons [7]. Fluocinolone acetonide may exert a similar effect within the sensory neurons of the scalp, increasing mitochondrial recruitment to these axons and decreasing the feeling of paresthesia.

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