CRADLE CAP IN ASSOCIATION WITH SCALP HYGIENE AND TRADITIONAL PRACTICES: A CASE REPORT

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ABSTRACT

Cradle cap, or infantile seborrheic dermatitis, is a common benign inflammatory condition in infants that mainly affects the scalp. It is often misattributed to poor hygiene, although its etiology is multifactorial, involving sebaceous gland activity, microbial colonization, and immune immaturity. Scalp care practices and traditional treatments may influence severity and duration. We report a case of a 4-month-old male infant with erythematous plaques and thick yellow scales on the scalp for seven days after repeated application of traditional oil without regular cleansing. The infant showed normal growth and no systemic symptoms. Diagnosis was made clinically. Management consisted of parental education, discontinuation of oil use, daily gentle cleansing with baby shampoo, and topical hydrocortisone 1% combined with ketoconazole 2% twice daily. After two weeks, lesions resolved completely without recurrence or side effects. This case emphasizes the importance of proper scalp hygiene, caregiver education, and appropriate topical therapy.

Keywords: *Cradle Cap, Infantile Seborrheic Dermatitis, Scalp Hygiene, Traditional Practices.*

INTRODUCTION

Cradle cap is a subset of infantile seborrheic dermatitis (ISD). The skin manifestations are marked by erythematous, scaly patches and plaques on sebaceous gland rich sites, including scalp, face, upper trunk, and intertriginous areas (Kayıran et al., 2022; Kang et al., 2019). ISD has a relatively different feature in contrast with seborrheic dermatitis in older age. Cradle cap's name is analogous to extensive involvement of the scalp. Cradle cap affect babies as young as age 2 weeks with peak inceidence at 3 months of age. Normally can resolves spontaneously within the first 6 to 12 months of life (Kang et al., 2019).

Currently, there is no known cause for cradle crap. However, there are many factors that have been hypothesized to influence the condition. One hypothesis is the secondary influence of maternal circulating hormones resulting in overactive sebaceous gland activity Sebaceous glands produce sebum, which is an oil-like substance. Overproduction of sebum causes the dead corneocytes (scale) to remain adherant instead of undergoing

normal desquamation (Kayıran et al., 2022; Tao et al., 2023).

Malassezia, normal flora that inhabits human skin. Malasezia has been implicated in many cases of cradle cap (Kang et al., 2019). The yeast breaks down sebum, consuming the saturated fatty acids, and subsequently leaves the unsaturated fatty acids behind. The primary role of these enzymes is to metabolize lipid into fatty acids to produce fungal cell walls responsible for virulence, including invasion and dissemination (Kayıran et al., 2022; Tao et al., 2023).

The selection of therapeutic modalities with optimal efficacy and tolerable side effects is essential. Treatment aims to reduce visible signs, pruritus, and reduction of scales and overall improvement in scalp appearance (Crăiniceanu et al., 2024). This case report aims to enhance understanding between application traditional oil, hygiene and the clinical manifestations of infantile seborrheic dermatitis, as well as to evaluate improvements in skin condition through a increase in hygiene habits and use topical therapy.

LITERATUR REVIEW

Cradle cap is the most common presentation of infantile seborrheic dermatitis (ISD), a benign inflammatory skin condition that primarily affects infants. It typically involves sebaceous gland–rich areas such as the scalp, face, and intertriginous regions. Clinically, it is characterized by erythematous patches and plaques covered with thick, greasy, yellowish to whitish scales. The condition is noncontagious and usually not associated with systemic symptoms. Cradle cap may begin as early as two weeks of age, with peak incidence around three months, and generally resolves spontaneously within the first 6–12 months of life (Kang et al., 2019; Kayıran et al., 2022).

Compared with seborrheic dermatitis in adolescents and adults, infantile seborrheic dermatitis tends to have a milder course and is typically self-limiting. Although the visual appearance may concern caregivers, most infants remain asymptomatic or experience minimal discomfort.

The exact etiology of cradle cap remains unclear, but it is widely accepted as multifactorial. One major proposed mechanism is increased sebaceous gland activity stimulated by residual maternal androgens circulating in early infancy. This hormonal influence leads to excessive sebum production, which interferes with normal desquamation and causes corneocytes to adhere, forming visible scales (Kayıran et al., 2022; Tao et al., 2023).

Microbial colonization, particularly by lipophilic yeasts of the genus *Malassezia*, also plays an important role. *Malassezia* is part of the normal skin flora and thrives in lipid-rich environments. It produces lipases that break down sebum triglycerides into free fatty acids, some of which can trigger mild inflammatory responses. The interaction between increased sebum production, *Malassezia* proliferation, and immature immune responses contributes to the development of the characteristic lesions of cradle cap (Kang et al., 2019; Tao et al., 2023).

Infant skin exhibits functional and immunologic immaturity compared with older children and adults. The epidermal barrier is still developing, and cutaneous immune responses are not yet fully optimized. This immaturity may increase susceptibility to superficial inflammation in response to

microbial metabolites and irritants. Even mild barrier disruption can facilitate inflammatory processes that promote erythema and scaling. Therefore, the balance between sebaceous activity, microbial colonization, immune response, and barrier integrity is central to the pathophysiology of infantile seborrheic dermatitis. Cradle cap is frequently misattributed to poor hygiene, although hygiene itself is not considered a primary cause. Nevertheless, scalp care practices can influence disease severity and duration. Infrequent cleansing may allow accumulation of sebum and scales, potentially worsening clinical appearance.

Conversely, overly aggressive cleansing, harsh shampoos, or vigorous mechanical removal may damage the skin barrier and aggravate inflammation (American Academy of Pediatrics, 2023).

Traditional scalp care practices, including the routine application of oils or herbal preparations, are common in many cultures and are often intended to promote scalp health and hair growth. However, repeated oil application without adequate cleansing can increase occlusion and surface lipid levels, creating favorable conditions for *Malassezia* proliferation. Several reports suggest that such practices may act as perpetuating factors and prolong the course of the disease when not accompanied by appropriate hygiene measures (Wei, 2025).

Management of cradle cap focuses on reducing scale accumulation, controlling mild inflammation, and improving scalp appearance. First-line treatment is generally conservative and topical. Regular gentle cleansing with mild baby shampoo is recommended to decrease sebum and loosen scales. Emollients can be applied to soften adherent crusts, allowing gentle mechanical removal without causing skin trauma.

Topical antifungal agents, such as ketoconazole, are effective in reducing *Malassezia* density and accelerating clinical improvement. Low-potency topical corticosteroids, such as hydrocortisone 1%, may be used for short durations to control erythema and inflammation in more pronounced cases. Combination therapy with antifungal and mild corticosteroid agents has demonstrated good clinical outcomes with acceptable safety profiles in infants when used appropriately and for limited periods (Victoire et al., 2019; Hasanbeyzade, 2023; Crăiniceanu et al., 2024).

Overall, evidence-based scalp care, caregiver education, and appropriate topical therapy form the cornerstone of effective cradle cap management.

RESEARCH METHOD

This article uses a case report design to describe the relationship between scalp hygiene practices and the use of traditional oils with the clinical manifestations of cradle cap (infantile seborrheic dermatitis) and the response to the treatment given. The approach used is a clinical descriptive one based on a single case of an infant patient examined at a dermatology outpatient clinic.

Clinical data were obtained through direct anamnesis with the patient's parents and dermatological physical examination during the first visit and follow-up visits. Anamnesis included the main complaint, duration and development of lesions, birth history, growth and development history, family medical history, scalp care practices, frequency of hair washing, and

previous use of traditional and topical products.

Physical examination is performed clinically through observation of lesions on the scalp to assess morphology, distribution, scale characteristics, signs of inflammation, and involvement of seborrheic areas. Diagnosis is made based on clinical findings consistent with the characteristics of cradle cap without additional supporting tests.

Interventions included educating parents, discontinuing the use of traditional oils on the scalp, improving hygiene practices with daily gentle cleansing using baby shampoo, and topical therapy with 1% hydrocortisone and 2% ketoconazole applied twice daily after bathing. Therapy outcomes were evaluated through clinical observation at a two-week follow-up visit to assess lesion improvement, reduction in scaling and erythema, and adherence to treatment recommendations. Patient identities were kept confidential, and data were presented anonymously for scientific publication purposes.

RESEARCH RESULTS

Case Presentation

A 4 month old male infant was brought to the dermatology outpatient clinic by his parents with a chief complaint of scaling on the scalp that had been present for approximately 7 days. According to the parents, the lesions initially appeared as mild flaking and gradually became thicker, more extensive and suppurating. The infant was otherwise healthy, with no history of fever or systemic symptoms.The patient was born aterm via sectio secaria because cephalopelvic disproportional history.

Growth and developmental milestones were appropriate for age. There was no family history of atopic disease, psoriasis, or other chronic dermatologic conditions. On further history taking, the parents reported routine application of traditional oil to the infant's scalp as part of daily scalp care practices. The oil was applied after morning and evening bathing for approximately two weeks prior to the onset of symptoms and was not consistently followed by scalp cleansing. Hair washing was infrequent, using baby shampoo, and was last performed one week prior to presentation. No prior medical treatment had been administered for the scalp lesions.

Based on the clinical findings, a diagnosis of cradle cap (infantile seborrheic dermatitis) was established. Management primarily on parents education and modification of scalp care practices. The parents were advised to discontinue the use of traditional oil, improve scalp hygiene with regular gentle cleansing using baby shampoo everyday and topical pharmacologic therapy was initiated with hidrocortison 1% cream and ketokonazol 2% cream applied twice daily after bathing.

At follow-up after 2weeks, significant improvement was noted, with marked reduction of scales and overall improvement in scalp appearance.

The infant asymptomatic. The parents reported good adherence to the recommended scalp hygiene practices and topical treatments.

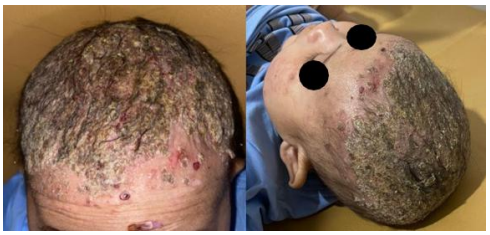

Figure 1. Initial Consultation. Erythematous With Thick Yellowish Scales And Observed On The Scalp

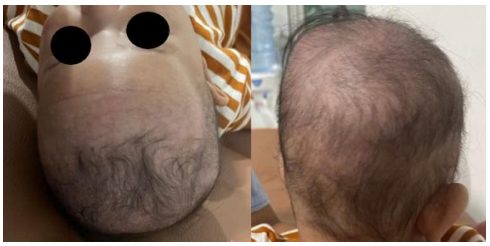

Figure 2. Two Weeks Follow-Up After Treatments. No Erythematous And Scales Were Observed On The Scalp

DISCUSSIONS

Cradle cap, also known as infantile seborrheic dermatitis, is a common inflammatory scalp condition in infants, characterized by greasy, yellowish or whitish scales. It is generally benign and self-limiting, with spontaneous resolution within the first year of life. Despite frequent misconceptions, cradle cap is not caused by poor hygiene, but rather results from a multifactorial interaction involving sebaceous gland activity, microbial colonization, and immune immaturity (Tao et al., 2023; Kang et al., 2019).

The pathogenesis of cradle cap is strongly associated with increased sebaceous gland activity during infancy, which is influenced by residual maternal androgens. This excessive sebum production provides a favorable environment for the proliferation of *Malassezia* species, a lipophilic yeast that is part of the normal skin flora. Under certain conditions, *Malassezia* can induce a mild inflammatory response, leading to the characteristic scaling observed in infantile seborrheic dermatitis (Kayıran et al., 2022; Tao et al., 2023).

In this case, cradle cap occurred in association with specific scalp hygiene practices and traditional scalp care methods. While hygiene practices are not considered a primary etiological factor, inappropriate scalp care may influence the severity, persistence, and clinical appearance of the disease.

Infrequent cleansing or excessive application of oily substances may promote sebum accumulation and scaling, thereby exacerbating the condition.

Conversely, overly aggressive hygiene practices, such as vigorous scrubbing or the use of harsh cleansing agents, may disrupt the skin barrier and worsen inflammation (American Academy of Pediatrics, 2023).

Traditional scalp practices, including the application of oils or herbal preparations, are commonly used in many cultures with the intention of promoting scalp health or hair growth. However, these practices may unintentionally act as perpetuating factors by increasing scalp occlusion and lipid content, which further supports *Malassezia* proliferation. Similar observations have been reported in previous studies, emphasizing that certain traditional practices may prolong disease duration when not accompanied by appropriate scalp hygiene (Wei, 2025).

Topical treatment is the gold standard in the pediatric population. Emollients are important for the reconstitution of the disturbed epidermal barrier function. Daily application of baby shampoo combined with an emollient applied thereafter is ideal for long-term treatment. Topical ketoconazole 1% in various pharmaceutical preparations can be recommended for 10–15 days[4]. Class 1 or 2 topical steroids such as hydrocortisone 1% monotherapy or in combination with ketoconazole, especially for DS within skin folds may be a good choice to defeat erythema (Hasanbeyzade, 2023; Victoire et al., 2019).

Clinical improvement following parents education, modification of scalp hygiene practices, and discontinuation of potentially aggravating traditional methods supports the importance of gentle, evidence-based scalp care in managing cradle cap. Recommended management strategies include regular washing with mild baby shampoo, the use of emollients to soften scales, and gentle mechanical removal without causing skin trauma.

CONCLUSION

Cradle cap is a common and self-limiting dermatologic condition in infants with a multifactorial pathogenesis. Although it is not caused by poor hygiene, inappropriate scalp care practices and the use of traditional oily preparations may contribute to increased severity and prolonged disease course by promoting sebum accumulation and microbial proliferation.

This case demonstrates that modification of scalp hygiene practices, parental education, and the use of mild topical anti-inflammatory and antifungal therapies can result in significant clinical improvement. Awareness of the potential impact of traditional practices and the importance of gentle, evidence-based scalp care is essential for effective management and prevention of unnecessary persistence of cradle cap.

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