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Management of A Patient with Kindler Syndrome: A Case Report

[1]Dr (Major) Upendranath Pathak, Division of Periodontology, Resident, AFMC, Pune, MUHS, Nasik, Pune, India

[2]Lt Col (Dr) Nitin Gupta, Division of Periodontology, Professor and HOD, AFMC, Pune, India

[3]Lt Col (Dr) B Harshavardhana, Division of Periodontology, Associate Professor, AFMC, Pune, MUHS, Nasik, India

Corresponding Author: Dr (Major) Upendranath Pathak, Division of Periodontology, Resident, AFMC, Pune, MUHS, Nasik, Pune, India

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Abstract

Kindler syndrome is an uncommon autosomal recessive condition marked by the presence of bullae on the extremities in infants, progressive changes in skin pigmentation and texture (poikiloderma), thinning of the skin, sensitivity to sunlight, as well as various issues affecting mucous membranes and increased fragility of the gums. This report presents the case of two siblings who were Asian male, showcasing the critical appearance of skin and oral manifestations of kindlers syndrome followed by conservative management of both cases.

Keywords: Blistering, Hyperkeratosis, Poikiloderma, Photosensitivity, and gingival fragility

Introduction

Kindler syndrome (KS) is a rare autosomal disorder that is characterized by progressively evolving phenotypes of the skin and mucous membrane including skin blistering, photosensitivity, and significant skin atrophy with gingival erosions. Complications affecting the eyes, esophagus, gastroesophageal tract, and urogenital system have also been documented in the literature as the findings of this syndrome. This syndrome was initially identified by Kindler in 1954 in a 14-year-old girl, and later this syndrome was further elaborated upon by Forman et al [1,2]. Kindler syndrome arises basically from mutations in the FERMT1 gene, also known as KIND1, which produces the protein kindlin-1. Over 400 individuals with KS linked to FERMIT1 mutations have been documented in the literature [3]. Although recent reviews have documented the clinical and genetic characteristics of KS, the detailed information on genotype-phenotype correlations, symptoms onset, and malignancy remain limited.

Several oral manifestations associated with Kindler syndrome have been reported to include symptoms such

as gingival swelling, considerable loss of bone, different levels of gingivitis, dental caries, and leukokeratosis affecting the buccal mucosa. [4]. However, the studies are very few as the occurrence of oral lesions in Kindler syndrome is very rare. In an attempt to make its diagnosis simpler and more conclusive, Fischer in 2005 gave a list of some major and minor criteria which has to be present [5]. Kindler Syndrome is an exceptionally rare condition, with only a few documented cases identified within the Indian population so far. It's noteworthy that many of these cases involve a family background of consanguineous marriages among the parents. [6]. This case report is of two brothers aged 11 yrs and 09 yrs who displayed classic symptoms of kindler syndrome along with the oral manifestations and were later managed for the same.

Case report

A 11-year-old male patient visited the Department of Periodontology with the complaint of generalized swelling in gums which bled frequently in the lower front teeth region for 05 years. He also had difficulty in chewing due to ulcers on the right buccal mucosa, corner of the lip, lower lip, and sensitivity in the lower front region of the teeth. The oral ulcers that appeared used to heal within 15 days but often returned in new spots within the mouth and were accompanied by some mild discomfort.

The history of the patient revealed that the patient was born resulting from a consanguineous marriage of the third degree, with a normal delivery. Since the age of five, he had a history of neonatal blister over lower limbs which was insidious in onset and gradually progressed to involve both lower and upper limbs as well as the face along with photosensitivity and sunburns with minimal sun exposure for which he had been under observation at the local government hospital. The family history indicated that the patient's 9-year-old younger sibling also exhibited comparable lesions. The general physical examination of the patient revealed that he was physically weak and mentally underdeveloped for his age.

On examination of skin, the patient revealed numerous hyperpigmented and hypopigmented spots that were scattered across the entire body, including the face, accompanied by noticeable poikilodermatous lesions affecting the upper chest, face, and neck areas. He had areas of atrophy of skin on the dorsum of the hands with sparse and thin hair (Fig. 1 a,b); The atrophic areas had cigarette paper-like wrinkles (Fig. 3). There was presence of webbing in the shin area of both feet and wrists of hand along with abscess in right foot and right hand (Fig 2 a, b). Nikolsky's sign was negative in all the skin lesions.

The patient was examined by an Ophthalmologist who noted the presence of conjunctivitis without active lesion. (Fig. 1 a, b). Intraoral soft tissue examination revealed healing reddish ulcers in buccal and labial mucosa. The gingiva of the patient was reddish pink in color, with generalized rounded gingival margins with accentuation in 41 and 42 regions with loss of scalloping. The consistency was soft and edematous with generalized bleeding from the gingival sulcus. Intraoral hard tissue examination revealed unerupted mandibular second premolars along with hypoplastic defects in 11, 21, 33 & 46 teeth (Fig. 5) which were confirmed by the IOPA radiograph. Ultrasound of the inguinal region revealed well defined, round to oval in shape discrete lymph node measuring the largest of 1.1×1.13 cm in the left inguinal region and largest measuring 2.28 ×1.14 and the hilar fat pad was well maintained in the right inguinal region suggestive of bilateral inguinal

lymphadenopathy. Oral health related quality of life – OHQoLUK (W) score was recorded to be 84 [9].

Findings of the sibling

On examining the sibling, similar findings of net-like telangiectasis with small white and pigmented spots and larger white and yellowish islets were found on his neck skin, eye, and oral mucosa. There was also the presence of reddish-pink swollen and edematous gingiva with rolled margins (Figure 8 to 9). He also had enamel hypoplasia in both the maxillary first and mandibular second premolar impacted (Figure 10 to 11). Oral health-related quality of life – OHQoLUK (W)) score was recorded as 82.

Hematological investigations including complete blood count, prothrombin time, activated partial thrombin time, Liver function Test & Renal function Test, routine urine investigations, and biochemical investigations including blood sugar examinations were done for the patient and were found within physiological limits.

As the oral ulcers were in a healing phase, the patient was referred to the dermatologist who performed a punch biopsy on the skin lesion located on the neck, and the sample was sent for histopathological analysis. Histopathological examination of skin tissue taken from the patient revealed epidermis showing mild ortho keratotic hyperkeratosis along with flattening of rete ridges, basal layer vacuolar degeneration and melanin incontinence.

Mild chronic inflammatory infiltrate was noted in periadrenal areas. No intraepidermal or subdermal bullae/increase in dermal fibrosis was seen. All these features gave a histopathological picture of kindler syndrome (Fig 7a). Additional karyotyping of the tissue sample revealed a normal gene karyotype, with no clonal abnormalities identified (Fig 7b). Based on Fisher's clinical criteria, the familial history and histopathological examination, a final diagnosis of kindler syndrome was arrived upon.

Figure 1(a): Net-like telangiectasis with small white and pigmented spots and larger white and yellowish islets on the neck, -(a) on the right side (b) and left side;

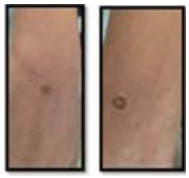

Figure 2: Healing abscess(a) dorsal side (b) ventral side of forearm

Figure 3: Atrophic skin with cigarette paper-like wrinkles on dorsum of the hands and palmoplantar punctate hyperkeratosis

Figure 4: Thick and glazed appearance of palmer skin with decreased palmar creases

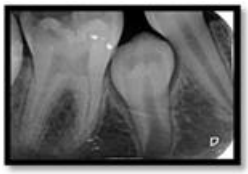

Figure 5: Unerupted 35

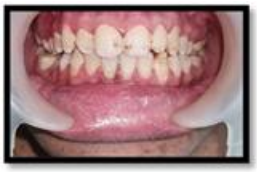

Figure 6: Apically positioned gingival margin 41 and 42 with inflammed reddish gingiva.

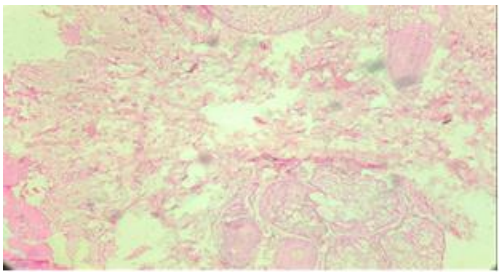

Figure 7 (a): Ortho keratotic hyperkeratosis along with flattening of rete ridges basal layer vacuolar degeneration and melanin incontinence;

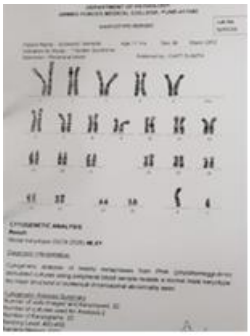

Figure 7 (b): Modal karyotype (ISCN 2020): 46, XY

Figure 8: Net-like telangiectasis

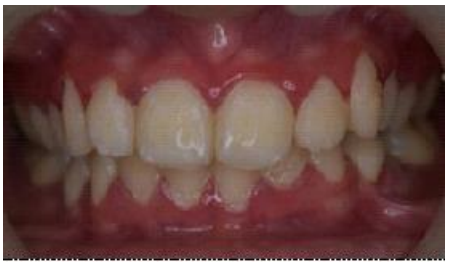

Figure 9: Reddish pink swollen and edematous gums with rolled margins

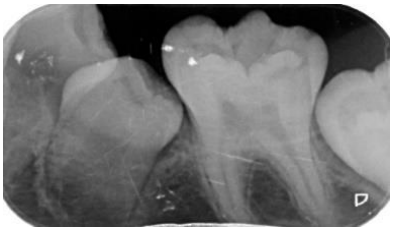

Figure 10: Unerupted 45

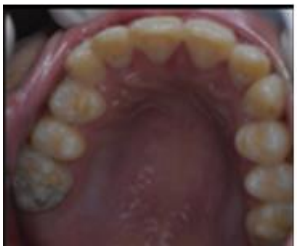

Figure 11: Enamel Hypoplasia in 16,26

Management

The patient was prescribed clindamycin 300mg tab twice daily for 5 days, Tab losartan 25mg once daily for 5 days, and sun protection cream for topical application on the face and skin for 15 days along with carboxy methyl cellulose eye drops. Tab Vit C 500mg for 5 days twice daily, multivitamin tablets once daily along with topical lignocaine gel for oral lesions and Chlorhexidine mouthwash 0.12% were also prescribed for 15 days. Oral prophylaxis and restoration of hypoplastic and carious teeth was done. All the oral lesions healed in 15 days and regular oral prophylaxis was done at every 15 days for 3 months.

Discussion

Kindler syndrome is a rare kind of autosomal recessive disorder. People with this condition experience blistering on their skin due to trauma, and these blisters heal with scars that are often thin and fragile. The disorder also affects mucous membranes, which can lead to, inflamed gums, blistering in the mouth or tooth loss. This syndrome is relatively rare with only about 19 cases per 1 million live births and roughly 11 cases per 1 million people in the general population of the United States. [10]. A similar kind of occurrence can be seen in

Europe, Asia, and Australia [11-12]. Kindler syndrome (KS) is often linked to close familial relations as seen in our cases where there was a history of consanguineous marriage.

Weibe reported periodontal findings and treatment of a 16-year-old female diagnosed with weary Kindler syndrome. The female patient had early exfoliation of deciduous teeth, severe periodontal bone loss around many permanent teeth and fragile bleeding gingiva with rolled gingival margins. In our case, fragile gingival bleeding with rolled gingival margin was found in 41,42 regions [14-15]. The literature also reports congenitally missing multiple teeth, retained deciduous teeth, and defective dentition. Similarly, we found impacted maxillary first and mandibular second premolar teeth in our case. Multiple hypoplastic defects were present in the upper and lower dentition [16].

The histopathological features of Kindler syndrome are characterized by poikiloderma, hyperkeratosis, epidermal atrophy, and hyper/hypopigmentation. Additionally, collagen and elastic fibers in the papillary dermis can show disruption [17-18]. In our case, mild ortho keratotic hyperkeratosis, along with flattening of rete ridges, basal layer vacuolar degeneration, and melanin incontinence, favored the diagnosis of Kindler's syndrome. Bilateral Inguinal lymphadenopathy has been reported in the literature in the case of Kindler syndrome, as was found in our case report [19].

In 2005, Fischer and colleagues established primary and secondary diagnostic criteria for Kindler syndrome (KS). The major criteria included acral blistering during infancy and childhood, progressive poikiloderma, skin atrophy, photosensitivity, and gingival fragility or swelling. Minor criteria encompassed syndactyly and involvement of other mucosal sites. Additional features included nail dystrophy, ectropion, palmoplantar keratoderma, leukokeratosis of the lips, squamous cell carcinoma, anhidrosis, skeletal abnormalities, and dental issues. Fisher concluded that a presence of a minimum of 02 major and 02 minor criteria is required for the diagnosis of Kindler syndrome. In our cases, five significant major indicators involving the presence of acral blistering in infancy and childhood, progressive poikiloderma, skin thinning, sensitivity to sunlight and fragile gums along with minor criteria like mucosal ulceration in labial gingiva and buccal mucosa, dental issues involving impacted teeth in maxillary first and mandibular second premolar with multiple hypoplastic defects in upper and lower dentition were found thus enabling us to diagnose it as a case of Kindler syndrome.

Management of Kindler syndrome is primarily symptomatic, focusing on mucosal involvement both extraoral and intraoral as well as their complications. To minimize skin injury and sun exposure, use of moisturizers and sunscreens. Nonsurgical periodontal treatments like oral prophylaxis along with good oral hygiene, should be prioritized, although teeth with poor prognosis may still experience bone loss [20]. Keeping in mind the recurrence rate of Kindler's syndrome, the management protocol for our cases was basically addressing the symptoms. During the management of symptoms, the patient's weight increased to 23.4 kg thus indicating improved nutritional intake. The healing of oral ulcers was uneventful and the Oral Health-Related Quality of Life (OHQL) improved from 84 to 116 in the elder brother and from 92 to 112 in his sibling thus indicating a marked improvement in the quality of life of the patients post management.

Conclusion

Even though Kindler syndrome (KS) is very rare, the affected individuals require a comprehensive and personalized treatment approach involving a

multidisciplinary team, including Dermatologists, Ophthalmologists, Pediatricians, Periodontists, Prosthodontists and Maxillofacial surgeons. Patients with KS should adapt their lifestyle activities to reduce blistering risks, using padding in areas prone to friction to prevent skin damage. The prognosis is typically poor, with early mortality often due to complications like sepsis, renal failure, or airway obstruction. In our case, short-term outcomes were very positive. However, regular periodontal check-ups are the mainstay for maintaining oral hygiene and managing symptoms effectively over time.

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