



Case Report

Cutaneous and Oral Mucosal Lesions in Cri-du-chat Syndrome

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Abstract: Patients with cat cry or “cri-du-chat” syndrome often present with hallmark signs of the condition. The purpose of this manuscript is to report the findings observed in skin and oral mucosa which produced high morbidity in a 19 year-old female patient with cat cry syndrome, considering the scarce descriptions of the lesions on these anatomical sites. Nutritional, neurological and dermatological manifestations are described; laboratory findings are also included. The impact of clinical findings on inadequate nutritional status of patient is discuss. The approach is emphasized in order to improve the intraoral diagnoses, management and quality of life of this patient.

Keywords: Mouth Diseases, Cri-du-chat Syndrome, Ulcers

1. Introduction

The cat cry or “Cri du Chat” syndrome (CdCS) is a genetic disease resulting from the deletion of the short arm of chromosome 5 (5p -) [1, 2]. Its clinical and cytogenetic features were described initially by Lejeune *et al.* in 1963 [3]. The CdCS is a rare disease with an incidence ranging between 1:15,000 and 1:50,000 in live-born infants [4]. The most important clinical feature in the CdCS is the high-pitched cry similar to that of cats, therefore its name, as well as the distinctive facial dysmorphism, the abnormal microcephaly, dermatoglyphics (transverse flexion creases in 92% of the cases) and severe mental and psychomotor retardation [5, 6].

The pathogenesis of the characteristic “crying” in the CdCS has been attributed to the morphological laryngeal alterations observed in the first reported cases with small, curved, hypoplastic, narrow and diamond-shaped epiglottis or square

larynx, with an area of abnormal air in the rear area during phonation [6]. These anatomical abnormalities, however, are not present in every patient with CdCS [7]. Mouth findings may be mandibular microretrognathia, malocclusion, anterior open bite, deep palate and seldomly even cleft palate [8]. Information on the conditions of the skin and especially of the oral mucosa in such patients is scarce; therefore, the aim of this case report is to inform the cutaneous and mucosal findings and their management in a patient with CdCS attending the National Institute of Medical Sciences and Nutrition “Salvador Zubirán”.

2. Case Report

Nineteen-year old, female patient presenting CdCS

diagnosis established by karyotype in 1995 and attending the outpatient clinic of Oral Pathology of the Dermatology Department in December 2014 was seen due to chronic ulcers in mouth of two-year evolution.

At oral examination the patient showed lip protrusion, and formation of serohematic scabs with fine scale in vermillion border of the lips. Intraorally, she had superficial, rounded and irregular, slightly honey-coloured pinpoint ulcers, some undergoing a healing phase, affecting both upper and lower labial mucosa (Figure 1a); the dorsum of the tongue area presented multiple, rounded millimetric ulcers with erythematous halo; as well as several scars affecting the rest of the mucosa, predominantly that of the lips (Figures 1b and 1c). Furthermore, the patient showed a pale, atrophic and slightly red mucosa due to erythematous candidosis in the dorsum of the tongue. At the time of assessment, the patient was also wearing orthodontic brackets in the upper teeth in order to fix the maxilla after trauma in 2012, with malocclusion, absence of the upper central incisives and salivary incontinence as a consequence of a constant open mouth. Her parents referred her breathing through the mouth and maintained her oral hygiene adequately, including brushing her tongue regularly, as recommended by the dentist. At the moment of the interview, the patient was not under any systemic drug therapy.



Figure 1. A. Superficial ulcers, predominantly caused by cutting edges on orthodontic devices in the upper lip mucosa showing peeling and honey-coloured scabs in the vermillion. Note the salivary deglutition incompetence in the lower lip. B. Multiple, millimetric superficial, aphthous ulcers affecting the area with greater atrophy in the dorsum of the tongue, accompanied by yellowish furred plaques, mucosal pallor and slight candidotic erythema on the central dorsum of the tongue. Note the absence of filiform papillae, mainly in lateral borders of the tongue. C. Erosions and multiple scars secondary to previous ulcers affecting the lower lip mucosa. D. Mucosa without ulcers or injury recurrence after 3 months of follow-up. Note the papillae recovery on the dorsum of the tongue.

The skin showed predominantly xerosis causing generalized pruritus, rash after scratching, displaying linear erosions and bloody scabs. Palms showed eczema plaques and lichenified plaques at the dorsal hands (Figure 2). Hair seemed

fragile and thin with no overt shaft alterations or telogen effluvium.

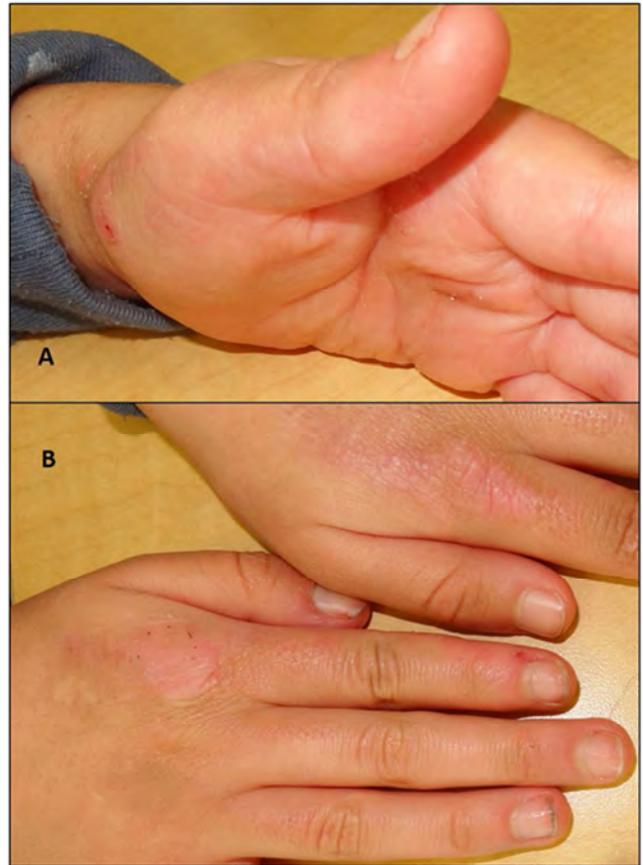


Figure 2. A. Eczema plaques in palms of the hands. B. Lichenified plaques at the dorsal hands and fissures in acral skin of the fingers.

Neurologically, the patient was awake, cooperated, showed motor aphasia (therefore using sign language and mono-bisyllables), hostile attitude, pain facies and easy crying. The patient weighed 41 kg, was 1.40 m tall, therefore the body mass index (BMI) was 20.92 Kg/m². Laboratory workup showed hemoglobin=13.1 g/dL, β -carotenes of 59 μ g/dL, creatinine=0.54 mg/dL and positivity for bacteriae (500 cells/ μ L), erythrocytes (5 cells/ μ L) and leukocytes (14 cells/ μ L) in urianalysis.

Among the relevant medical history data feature the patient's threatened miscarriage at six weeks of pregnancy and having been born at 36 weeks by cesarean section because of fetal distress due to circular double cord around the neck. The newborn weighed 2,100 g and measured 44 cm, was given an Apgar score of 7/8 and presented delayed crying and breathing difficulty upon birth. Multiple respiratory infections during early childhood and resolved cardiac murmur were also recorded. Physical examination revealed fenotypical alterations characterized by an average forehead, telecantus, up-slanted palpebral fissures, prominent nasal septum and broad nose, midfacial hypoplasia, short philtrum, microretrognathia, low-set ears and extended helix low branch. Mammary glands corresponded to a Tanner IV, a cheloid scar on the left flank was detected and genitals corresponded to a

Tanner V. Bilateral cubitus valgus, bilateral tenar hypoplasia and left index with swan-neck finger deformity were also found. The spine was slightly deviated to the right.

The diagnoses of traumatic mouth ulcerations exacerbated by nutritional deficiencies and mucosal inflammation secondary to erythematous candidosis were made, and treated with 200 mg ferrous sulphate and β -carotenes (Glutamin-Plus) p. o., as well as by the use of 1 ml nistatin (100,000 U) rinses, five times per day for four weeks together with hydration, lip lubrication using topical petrolatum and administration of amalgate suspension (Aluminium magnesium carbonate hydroxide hydrate) as mouthwash. Soft wax was placed on the orthodontic devices until their removal. Improvement was evident by an increase in food intake within 15 days of treatment and a happy, friendly facies after six weeks of treatment (Figure 1d). After a follow-up of eight months, a weight increase (43.9 kg), and height increase (141.4 cm) were also recorded (BMI 22 Kg/m²), together with a biceps skinfold of nine mm and a triceps skinfold of 20 mm. The patient did not attend further follow-up sessions.

3. Discussion

Children with CdCS have generally an extremely limited growth and development due to the difficulty of being fed as well as to the weak suction, dysphagia, muscular hypotonia and gastroesophageal/nasal reflux [9]. In our patient, several factors interfered in her food intake. The use of orthodontic devices causing trauma, together with the mucosal atrophy secondary to the constant loss of iron due to urinary infection and to a low concentration of serum β -carotenes, and the oral mucosal inflammation due to erythematous candidosis that possibly developed as a cause of xerostomy while our patient breathed through the mouth, seem to have all promoted the mucosal rupture and multiple, chronic and painful ulcer formation that hindered the ingestion of patient, therefore worsening her deteriorated nutritional status and causing considerable morbidity. The resolution of the ulcers and weight gain after an individualized nutritional care process stress the importance of promoting adequate conditions for the oral mucosa in order to maintain its integrity. Correspondingly, the anxiety produced by the oral mucosa lesions may have reflected upon the first evaluation of patient, whose attitude greatly improved after proper oral mucosa and nutritional measures.

In individuals with rare genetic disorders associated to physical and/or motor disability such as CdCS patients, the oral mucosa care is usually inadequate [10, 11], and furthermore in those low-income patients [12]. In our patient, we could confirm an adequate oral care on behalf of the patient's family and dentists. However, the prolonged, indefinite use of orthodontic devices with cutting edges, usually promotes a continuous injury to the oral mucosa, which may in turn cause diverse pathologies such as frictional keratosis, reactive lesions such as fibrous hyperplasia, or recurrent traumatic ulcers such as those detected in our patient. On the other hand, on the basis of literature, there appears to

be no data to justify the necessity to clean the tongue on a regular basis. One exception would be oral malodour [13]. The indication of such a measure in our patient on an unidentified atrophic and inflamed oral mucosa by the dentist was inadequate, as this was a cause for its rupture.

Additionally, self-injurious behaviour has been described in a wide percentage of patients with CdCS (70.3%) [14]; however, the clinical findings of these lesions are scarcely reported. In our patient, the cutaneous damage is displayed in Figure 1 and thus may suggest its relationship with self-inflicted lesions such as the lichenified plaques found in the dorsal hands as well as the scratching and pruritus associated to xerosis [14]; unfortunately, no further studies on skin could be performed because of lack of follow-up.

4. Conclusions

A wide spectrum of clinical manifestations can be seen in CdCS patients; skin and oral mucosa are potentially involved, causing morbidity. Oral mucosal lesions may interfere in food intake and growth of CdCS subjects, but other factors may also impact in the development of these patients. Self-injurious behaviour occurs frequently. A close monitoring on these kind of patients is advisable in order to maintain them free from factors which may produce skin or mucosa trauma or injury, therefore affecting the quality of life importantly.

References

- [1] Overhauser J, Huang X, Gersh M, et al. Molecular and phenotypic mapping of the short arm of chromosome 5: sublocalization of the critical region for the cri-du-chat syndrome. *Hum Mol Genet* 1994; 3: 247-252.
- [2] Simmons AD, Goodard SA, Gallardo TD, et al. Five novel genes from the cri-du-chat critical region isolated by direct selection. *Hum Mol Genet* 1995; 4: 295-302.
- [3] Lejeune J, Lafourcade J, Berger R, et al. Trois cas de délétion partielle du bras court d'un chromosome 5. *C R Hebd Seances Acad Sci* 1963; 257: 3098-3102.
- [4] Higurashi M, Oda M, Iijima K, et al. Livebirth prevalence and follow-up of malformation syndromes in 27,472 newborns. *Brain Dev* 1990; 12: 770-773.
- [5] Niebuhr E. The Cri du Chat syndrome: epidemiology, cytogenetics, and clinical features. *Hum Genet* 1978; 44: 227-275.
- [6] Yáñez-Vico RM, Rodríguez-Caballero A, Iglesias-Linares A, et al. Craniofacial characteristics in cri-du-chat syndrome. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010; 110: e38-44.
- [7] Colover J, Lucas M, Comley JA, et al. Neurological abnormalities in the 'cri-du-chat' syndrome. *J Neurol Neurosurg Psychiatry* 1972; 35: 711-719.
- [8] Mainardi PC, Pastore G, Castronovo C, et al. The natural history of Cri du Chat Syndrome. A report from the Italian Register. *Eur J Med Genet* 2006; 49: 363-383.

- [9] Marinescu RC, Cerruti Mainardi P, Collins MR, et al. Growth charts for cri-du-chat syndrome: an international collaborative study. *Am J Med Genet* 2000; 94: 153–162.
- [10] Solanki J, Khetan J, Gupta S, et al. Oral rehabilitation and management of mentally retarded. *J Clin Diagn Res* 2015; 9: ZE01-6.
- [11] Liu Z, Yu D, Luo W, et al. Impact of oral health behaviors on dental caries in children with intellectual disabilities in Guangzhou, China. *Int J Environ Res Public Health* 2014; 11: 11015-11027.
- [12] Molina-García A, Castellanos-Cosano L, Machuca-Portillo G, Posada-de la Paz M. Impact of rare diseases in oral health. *Med Oral Patol Oral Cir Bucal* 2016; 21: e587-594.
- [13] Danser MM, Gómez SM, van der Weijden GA. Tongue coating and tongue brushing: a literature review. *Int J Dent Hyg* 2003; 1: 151-158.
- [14] Collins MS, Cornish K. A survey of the prevalence of stereotypy, self-injury and aggression in children and young adults with Cridu Chat syndrome. *J Intellectual Disability Res* 2002; 46: 133-140.