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Case Report

Fraser Syndrome: A Report of a Case from Bamako

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Abstract: Fraser syndrome is a rare autosomal resecessive polymalformatif syndrome whose main manifestations are: the cryptophtalmia, syndactylies, visceral and urogenital defects. We report the case of a 6 year old child, 3rd child of a sibling of 3 children from consanguineous marriage, without antecedents personal and family, received in consultation at CHU-IOTA for unilateral symblepharon, syndactyly of 2nd and 3rd interdigital spaces without any other organic defects. The diagnosis of Frazer syndrome has been retained and the child is referred to the team of annexes and orbito-palpebral surgery for better surgical management of cryptophtalmia and parents were referred to the geneticist for genetic counselling regarding future pregnancies. We emphasize the genetic aspects, utility of Tomas' diagnostic critéria and necessity of prenatal diagnosis.

Keywords: Fraser Syndrom, Cryptoptalmia, Syndactyly, MALI

1. Introduction

In 1962, the British geneticist George FRASER described for the first the syndrome which henceforth bore his name [1]. This Fraser syndrome or cryptophtalmos syndrome is a congenital genetic abnormality characterized by variable expression of cryptopthalmos, syndactyly, laryngeal stenosis, renal agenesis, abnormalities of ears and other minor anomalies (external genital, nasal, orofacial, musculoskeletal, gastro-intestinal, cerebral, cardiac,…) [2]. The diagnosic is made by the combination of the Tomas' diagnostic criteria in the following manner: combination of two (02) major and one (01) minor criteria or one (01) major and four (04) minor criteria were present in a patient [2, 3].

The major criteria are: All forms of Cryptophtalmos, Syndactyly, Genital anomaly and Children of the same siblings with cryptophthalmic syndrome [2, 3].

The minor criteria are: Malformations of the nose, Malformations of the ears, Malformations of the larynx, cleft palate, cleft lip, Anomaly skeletal, Umbilical hernia, Renal agenesis and Developmental delay/Psychomoteur retardation [2, 3].

The cryptophtalmia is classified in three stages [4]:

1) Total Cryptophthalmos: Presence of a Fold skin extending from the eyebrow to the cheek, with an absence total palpebral fissure and eyeball,
2) Partial cryptophthalmos, two possibilities:
   a) The presence of an eyelid outline without eyeball,
   b) The congenital symblepharon with a palpebral fissure and an eyeball.

2. Observation

It is a child of 6 years old, female, 3rd child of a sibling of 3 children from consanguineous marriage; received for malformation of the upper right eyelid. Without antecedents, personal and family, pathological notable. The clinical examination noted:

1) Colobome of the medial part of the upper right eyelid

associated with a congenital symblepharon that we attach to the 3rd form of cryptophthalm according to the classification of (Major criteria).

2) Hypertelorism = Malformation facial (Minor criteria).
3) Telecanthus = Malformation facial (Minor criteria).
4) Epicanthus palpebralis = Malformation facial (Minor criteria).
5) Nose root hypoplasia = Malformation of nose (Minor criteria).
6) Low ear implantation = Malformation of ears (Minor criteria).
7) Bilateral Syndactyly (Major criteria).

The combination of two (02) major criteria et three (03) minor criteria, we have been retained the diagnosis of Fraser syndrome. The child was referred to paediatrics for investigation of a polymalformative syndrome, the investigation concluded that there were no other organic abnormalities (TORCH serology = Negative, Abdominal and Cardiopulmonary Imagery = Not Special).

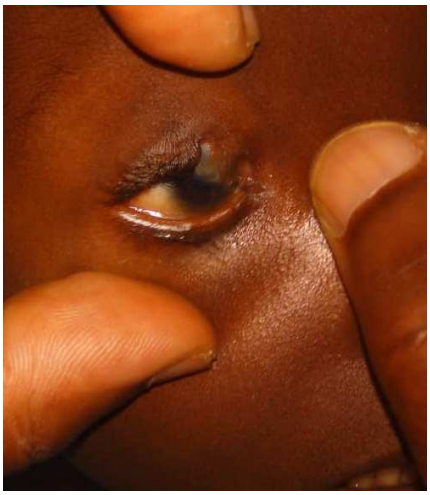

Figure 1. *Colobome and Congenital Symblepharon right eye.*

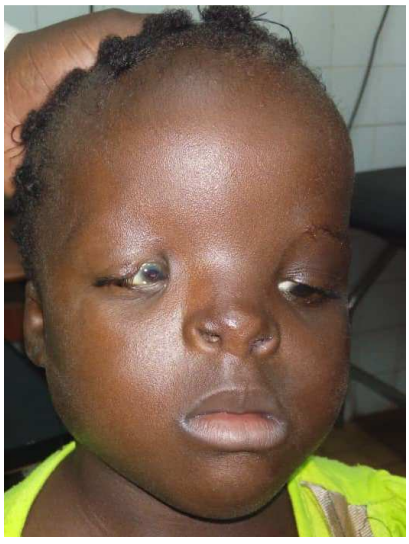

Figure 2. *Hypertelorism, telecanthus, bilateral epicanthus palpebralis and nose root hypoplasia.*

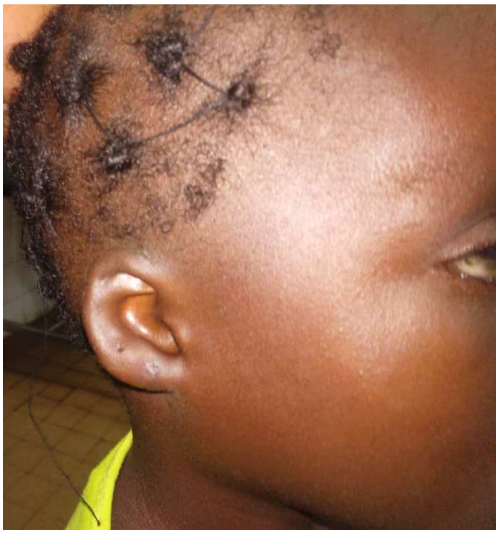

Figure 3. *Lo wear implantation.*

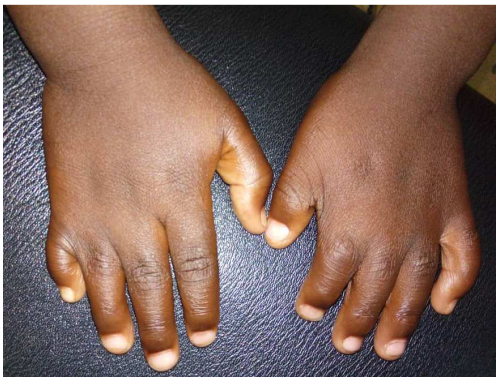

Figure 4. *Bilateral syndactylies.*

3. Discussion

The world incidence of Fraser syndrome would be 0.043per 10,000 live births [5]. Its prevalence in Europa is estimated, by European Surveillance of Congenital Anomalies, at 0.20per 100,000 births [5]. But its prevalence in Africa is unknown. Rare genetic disease, the Fraser syndrome transmission would follow the autosomal recessive mode during which we would observe total or partial and unilateral or bilateral cryptophtalmos associated with several other organic anomalies [6, 7]. In our case, partial cryptophthalmos associated with other organic abnormalities confirms the mode of autosomal recessive transmission of Fraser Syndrome in our patient. Litterature noted consanguineous marriage in 25% of patients [8] but a spontaneous mutation homozygote or compound heterozygote may be responsible for Fraser syndrome [9, 10]. The genes concerned are: Gene FRAS 1 on the chromosome 17q21, Gene FREM 2 on the chromosome 13q13 and Gene GRIP 1 on the chromosome 12q14 [11]. These genes listed above code for intercellular communication proteins, having an important role in adhesion between embryonic epidermal structures and the mesenchyma. This would explain the developmental defects observed during Fraser syndrome reflecting the alteration of the epithelial-mesenchymal interactions necessary for the normal

completion of morphogenesis [11]. Hence the etiopathogenic hypothesis of the deficiency of apoptosis as responsible of Fraser syndrome [11]. The responsibility of consanguineous marriage in the transmission of this rare disease, emphasizes the need for antenatal diagnosis by medical imagery [12] and the importance of genetic counselling before any consanguineous marriage. Futher, our case relance the discussion on the use of Tomas' diagnostic criteria, who wold be obsolete according to some authors [3]. Our case being in perfect compliance with the Tomas' diagnostic criteria, we can affirm the utility of these criteria for the diagnosis of Fraser syndrome.

4. Conclusion

Rare genetic desease, the Fraser syndrome represents a surgical and esthetic excellent challenge. The responsibility of consanguinity in its transmission, as well as that of several other genetic diseases, involves us to a change of habits especially in our African countries where the consanguineous marriage is legend.

Conflicts of Interest

The authors declare no conflict of interest.

Authors Contributions

All authors have read and approved the final version of the manuscript.

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