Case Report

AN UNUSUAL CASE OF FRASER SYNDROME

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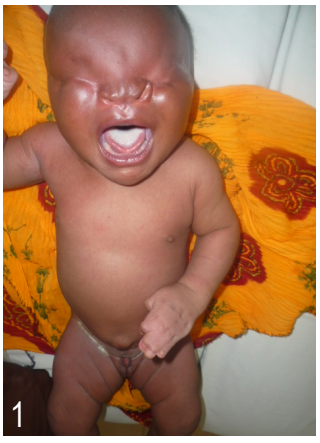
INTRODUCTION

Fraser syndrome is a genetic disease, with an autosomal recessive transmission [1,2]. The genetic background of this disease has been linked to a gene called FRAS1, which seems to be involved in skin epithelial morphogenesis during early development [3]. It is characterized by developmental defects including cryptophthalmos where the eyelids fail to separate in each eye, and genital malformations such as micropenis, cryptorchidism or clitoromegaly [4].

CASE PRESENTATION & RESULTS

We report a case of 6 month-old-female who is a first born of a Rwandan family, referred to our genetic clinic for investigation of congenital multiple malformations. Her parents were non consanguineous. The pregnancy was uneventful and her mother did not take any medication. She was born at term by normal delivery with a birth weight of 3 kg and multiple malformations. On admission, clinical examination showed prominent forehead, depressed nasal bridge and a small nose. Ocular examination showed complete fusion of eyelids (cryptophthalmos), both eyeballs were within normal size, without eyelashes (Figure 1). Visual acuity was poor, however the baby was able to follow light. There was bilateral skin syndactyly involving the second, third, fourth and fifth digits (Figure 2). The external genital examination showed fusion of labia and enlargement of clitoris (clitoromegaly) (Figure 3).



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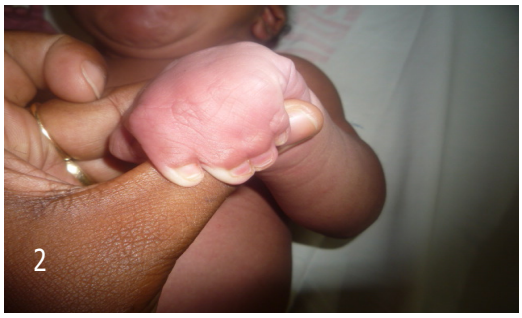


Figures 1 & 2: Patient affected by Fraser syndrome presenting (1) cryptophtalmos, cleavage along the mid plane of nares and (2) syndactyly.

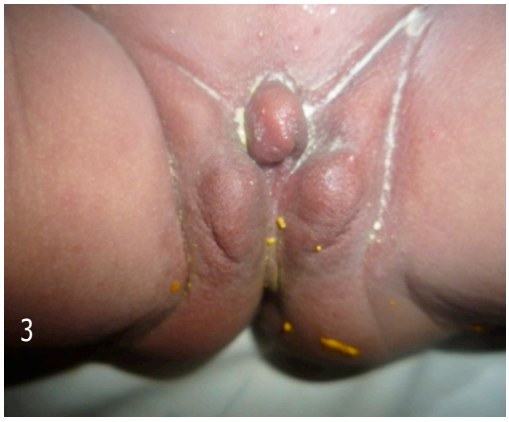
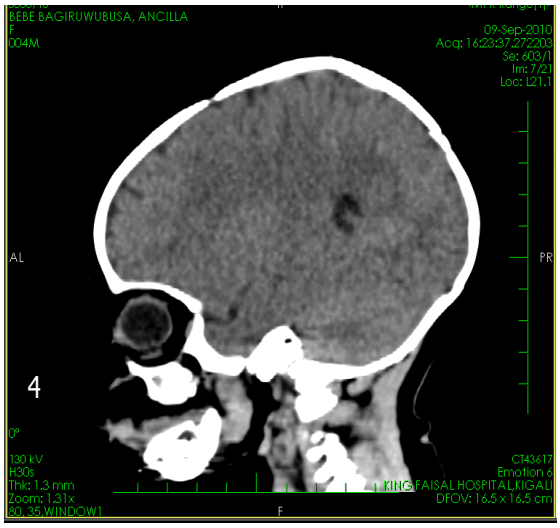
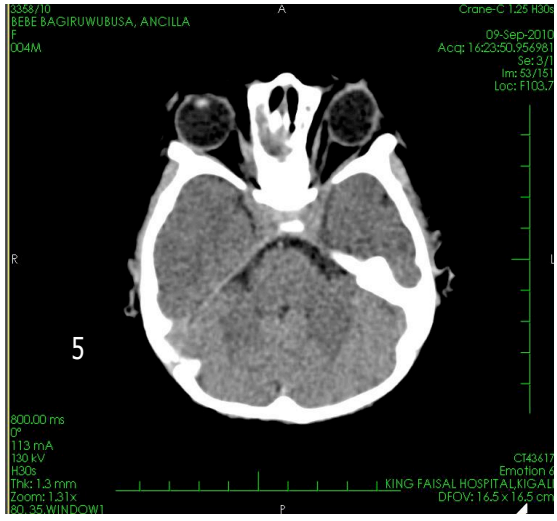


Figure 3: External genital organs showing enlarged clitoris and abnormally closed skin fold of the vaginal opening.

Head CT-scan showed normal brain, normal right eyeball, and microphthalmos on the left orbit with well developed extraocular muscles and optic nerves (Figures 4,5,6). Abdominal CT-scan revealed left renal agenesis, hypoplastic uterus and urinary bladder. Complementary biological investigations including renal functional (BUN, creatinin and cleatinin clearance) were normal. In addition, the cytogenetic study performed on peripheral lymphocytes showed normal female karyotype 46,XX.

The presence of female pseudohermaphroditism together with renal agenesis and consequent end-stage renal failure associated with cryptophthalmos were suggestive of Fraser syndrome.





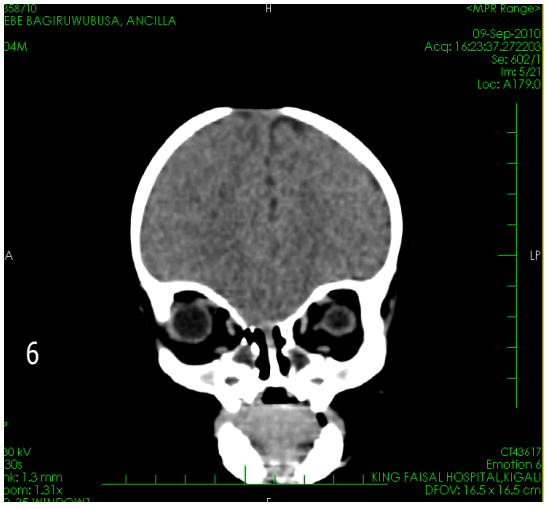


Figure 4,5,6: Brain CT-scan and orbits. The orbits appear in the orbital sockets but there is no lens visualised in the left orbit.

The cryptophthalmos was tentatively operated at 7 months of life using a procedure reported by Brazier and Collins [5]. After normal ocular and extraocular findings on CT-scan, the ophthalmologist decided to perform eyelid and orbital reconstruction on the right side. However ended up by closing the wound because of vascularised and opacified cornea and partially developed eyelid, with almost no levator and orbicularis muscles for protection of the eyeball.

DISCUSSION

Fraser syndrome is a very rare autosomal recessive disease with major diagnosis criteria including cryptophthalmos, syndactyly and genital abnormalities as reported previously [4,6]. The minor features are congenital malformations of nose, ear and larynx, skeletal defects, umbilical hernia, renal agenesis and mental retardation. Diagnostic criteria to identify Fraser syndrome include at least 2 major and 1 minor criteria or 1 major and 4 minor criteria [7]. This reported case had 3 major criteria: cryptophthalmos, syndactyly and genital abnormalities with left renal agenesis; and all minor criteria.

An exploratory and surgical correction was tentatively done in this patient but unfortunately was not successful due to undeveloped eyelid and opacified cornea. A hospital based study performed in London 2009, on surgical strategy for the correction of cryptophthalmos in Fraser syndrome performed in London described surgery in these cases involving the creation of fornices, with subsequent upper and lower eyelid reconstruction with local skin/ muscle flaps.
This study described postoperative visual acuity improved from perception of light to 20/200. Good outcomes in terms of corneal health were achieved in 6 of the 10 eyes operated for incomplete cryptophthalmos [8].
Apart from the ocular congenital malformations, our patient had left renal agenesis. Fraser syndrome should be suspected in all cases with renal agenesis of whom 25% die during the first year of life, death being usually secondary to renal failure [1,3].

CONCLUSION

Although Fraser syndrome is rare and has a poor prognosis, the periocular surgical management of these complex cases may be tried using a systematic approach as described in the London study [8], which is the largest such series reported to date.

To the best of our knowledge, this is a first case described in Rwandan population.

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