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CASE REPORT

Case report: ring chromosome 15 syndrome and esophageal atresia

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Abstract

Ring Chromosome 15 Syndrome is a rare neuploidy with variable phenotype in which the definitive diagnosis is made through karyotype and can be complemented with molecular methods to more accurately identify the telomere break point. There is no specific treatment, only clinical support or treatment targeting the correlated malformations. This work consists of a case report of a newborn with early diagnosis based on initial clinical alterations and imaging and karyotype tests. We describe the assessment, diagnostic confirmation, and clinical and surgical management of the patient, as well as a review of the literature.

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INTRODUCTION

Ring Chromosome 15 Syndrome [r(15)] is a rare abnormality reported in less than 100 cases throughout the literature. There is loss of telomeres, fusion of fracture points of the short arm and the long arm of the chromosome forming a ring.[1,2]

It is a rare aneuploidy with a variable phenotype, but predominantly presenting physical alterations, growth delay, intellectual disability and diverse dysmorphisms, making the correlation between genotype and phenotype difficult.[3,4]

The diagnosis is made through the karyotype, being able to identify the break point with greater precision with the help of molecular methods.[5,6]

There is no specific treatment, only clinical support or treatment targeting the correlated malformations, for example, surgery.[7-11]

This case report aims to direct and favor the diagnosis of similar clinical conditions, since the condition is underdiagnosed.

CASE REPORT

Newborn, female, mother aged 25 years, primiparous, healthy, pregnancy without complications or use of medication. Denies drug addiction. Non -consanguineous parents . He denies family illnesses. Vaginal delivery, without complications, gestational age of 39 weeks and 2 days, birth weight 3565 grams (50th percentile), head circumference 34 cm (50th percentile), chest circumference 34.5 cm (50th percentile), length 49cm (50th percentile), first minute APGAR 8 and fifth minute 10.

At five hours of life, she was referred to the neonatal intensive care unit (neonatal ICU) due to intense drooling and difficulty in passing a nasogastric tube. Contrast radiography of the chest was performed, which showed esophageal atresia and esophagogram with a blind background image, confirming the diagnostic hypothesis. The patient was fasted, taken to the neonatal ICU and performed esophagoplasty. Interned for 20 days in the neonatal ICU, being transferred to the pediatric ward. Normal echocardiogram.

The mother evaded the service, returning to the pediatric emergency room after fifteen days due to an episode of choking, cyanosis, laryngeal stridor, drowsiness and hypotonia. Investigated and diagnosed as residual subglottic esophageal stenosis , Nissen surgery and gastrostomy were performed.

Genetic investigation was initiated at three months of age, with age-appropriate head circumference and delayed neuropsychomotor development with cervical hypotonia. Absence of gross dysmorphism on the faces or café au lait spots, as described in the literature as a dysmorphic sign , but with clinodactyly of the fifth finger on the left hand, thinning of hair in the bilateral parietal region and bilateral strabismus.

A karyotype with 46,XX ,r(15)(p13q26)[47]/45,XX,-15[3] was performed, which in 47/50 analyzed metaphases a ring chromosome 15 was detected and in 3/50 metaphases it was Chromosome 15 monosomy was detected. Parents did not perform karyotyping. Therefore, diagnosis of Ring Chromosome 15 Syndrome requiring investigation with other molecular tests to characterize breakpoints and eventual losses and gains of material and correlate them with esophageal atresia (Figure 1).

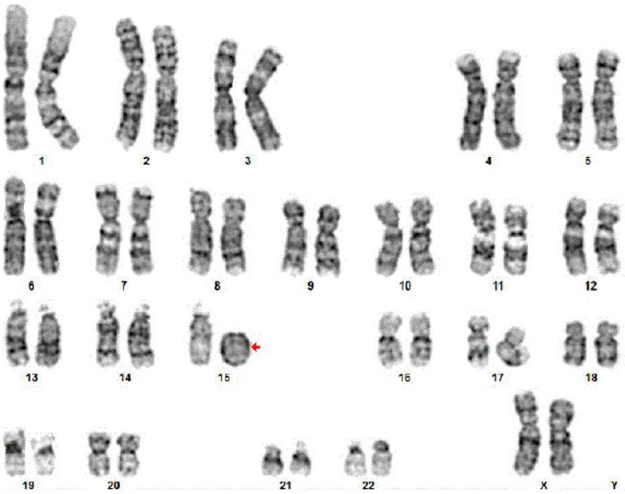

Figure 1. G-Band Karyotype.

At seven months of age, there is a delay in neuropsychomotor development without head support when the child is elevated, no social smile, does not hold objects or remain seated with support, does not vocalize or imitate sounds, but follows objects with his eyes and has a reaction to strange people.

DISCUSSION

The first description in the literature was in 1966, since then few cases have been reported due to the difficulty in correlating the clinical picture with the genetic characteristics of the patient. The mean age at diagnosis is 8.1 years.[1,2]

Hatem et al. (2007)[3] describes an intrauterine diagnosis of Ring Chromosome 15 Syndrome with congenital malformation confirmed at autopsy with triangular facies, diaphragmatic hernia, pulmonary and renal hypoplasia, associated with polycystic kidneys. Fetus with thickened nuchal fold, single umbilical artery and intrauterine growth retardation indicate the need for investigation for chromosomal abnormalities.[4]

The clinical features of the syndrome were varied and nonspecific. Clinodactyly of the fifth finger[5], sparse hair implantation in the temporal region, diaphragmatic hernia, generalized hypotonia, renal hypoplasia and cardiac malformations are described in the literature [6] . Esophageal atresia , although described in this case report, there is no description in other articles. Male patients may present with cryptorchidism, azoospermia , hypogonadism or hypogenitalism and in most cases they are sterile[7,8]. However, ovarian gonadal function , sexual development, and fertility appear to be normal in most affected women.

Genetic diagnosis is based on karyotype and other molecular techniques, such as fluorescent in situ hybridization (FISH) that characterizes the r chromosome (15) and matrix comparative genomic hybridization (Array -CGH) that determines the size of the 15q[9-11]. In addition to the typical alterations of the syndrome, the epigenetic influence and consequences of ring chromosome 15 instability must be considered.

Treatment is targeted at the specific symptoms that are apparent in each individual, including surgical corrections, physical therapy, speech therapy, and other medical, social, and/or professional services. Genetic counseling will also be of benefit to affected individuals and their families[10,11].

The fact that there is no description of Esophageal Atresia in the literature indicates that in the event of this chromosomal disease, the screening for internal malformations should be as broad as possible, not restricting only to phenotypic malformations such as short stature, delay in neuropsychomotor development, transverse fold or others. dysmorphic characteristics , but cardiological and gastrointestinal alterations, among others already described in the literature.

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