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AICARDI SYNDROME: A CASE REPORT

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Abstract: *Aicardi is a rare and sporadic syndrome characterized by agenesis or dysgenesis of corpus callosum, infantile spasms and chorioretinal lacunae [5]. This syndrome is supposed to be due to a X-linked spontaneous, monogenic mutation [16]. We report a 3 month-old girl with agenesis of corpus callosum, infantile spasms, ocular abnormalities and other complex malformations.*

Keywords: *Aicardi syndrome, corpus callosum, infantile spasms, abnormalities.*

1. Introduction

Aicardi syndrome was first described by a French neurologist, Dr. Jean Dennis Aicardi in 1965 [10].

This congenital disorder is a de novo mutation that may occur on the Xp22 chromosome [21]. Although the presence of this syndrome in males has been disputed, new cases have been reported in males with karyotype 47XXY (Klinefelter syndrome) [6], [9], []18], [22].

The etiology of this syndrome remains unknown, but new techniques that can show low-level mosaicism, chromatin level and also changes at the DNA may reveal the cause of this syndrome [8].

The syndrome is characterised by the triad of agenesis of corpus callosum (partial or complete), infantile spasms and chorioretinal lacunae. However, now is known that Aicardi syndrome has a much broader spectrum of abnormalities involved. In addition, patients often present with postnatal growth retardation, ocular abnormalities (microphtalmia, coloboma, cataract, optical atrophy), facial features (prominent maxilla, upturned nasal tip, decreased angle of the nasal bridge, sparse lateral eyebrows, cleft lip, cleft palate), various skin lesions (multiple nevi, hemangiomas), other cerebral malformations (polimicrogyria, grey matter heterotopias, intracranial cysts, enlarged lateral and third ventricules, cavum septum pellucidum, hypoplastic cerebellar vermis, asymmetric brain

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development) and abnormalities of ribs and spine [3], [20].

Diagnostic criteria for the Aicardi syndrome, adapted from Aicardi and modified by Sutton et al, have been proposed in 1999. They included the triad with all the classic features or two classic features plus at least two other major or supporting features. The major features are cortical malformations, periventricular and subcortical heterotopias, cysts of the third ventricle and/or choroid plexus, optic disc/ nerve coloboma or hypoplasia while the supporting features are represented by vertebral and rib abnormalities, microphtalmia, split-brain EEG, gross cerebral hemispheric asymmetry, vascular malformations or malignancy [2], [19]. The diagnosis is suggested by clinical features in association with neuroimaging studies.

For the time being, no cure was reported for the syndrome and its treatment includes control of seizures with multiple antiepileptic medications and surgical procedures (corpus callosectomy and vagal nerve stimulation) and treatment of complications [13].

The prognosis varies for each patient, most of them having a short life expectancy. The median age at death is 18,5 years and the patients may have multiple complications, recurrent pulmonary infections and mental retardation. Children affected by the disease are unable to communicate and walk and require permanent care [17].

2. Case report

We present the case of a 3 month-old girl admitted to the Clinical Children's Hospital of Brașov with fever, nasal obstruction and feeding problems.

She had no significant family history and both parents were healthy. She was born at 36 weeks gestation delivered through caesarean section due to pelvic presentation. The birth weight was 1990g and the APGAR score of 8/10. Immediately after birth her general state deteriorated and she was diagnosed with cheilognatopalatoschizis, signs of mild respiratory insufficiency, hypotony, right eye agenesis and asymmetric epileptic spasms/ focal seizures of the right side.

Furthermore, ophthalmologic (right eye agenesis, left coloboma) and intracranial abnormalities (microphtalmia, agenesis of corpus callosum, enlarged lateral and third ventricles, cavum septum pellucidum) were diagnosed.

She was admitted to the neonatal intensive care unit (NICU) and treated with oxygen and antiepileptic medication intravenous (phenobarbital 10 mg/kg followed by oral 5 mg/kg/day bid), with respiratory improvement but without control of the seizures. Following a 2.5 months hospitalization period at the neonatal unit, she was discharged on antiepileptic therapy with mild improvement in the general condition.

At the age of 3 months old she was admitted due to respiratory insufficiency, poor medical state, palor, hypotony and poor medical condition.

Routine blood tests showed normal blood cell counts, hypoglycemia (26 mg/dl) and compensated metabolic acidosis.

Transfontanellar ultrasound confirmed agenesis of corpus callosum and hydrocephalus. Ocular ultrasound showed agenesis of right eye and agenesis of left optic nerve. The cardiac ultrasound revealed an atrial septal defect.

The EEG showed asynchrony between the two hemispheres suggestive for "split-brain" EEG. She had decreased appetite and feeding difficulties and required feeding through a nasogastric tube. The antiepileptic treatment (phenobarbital 5 mg/kg bid and sodium valproate 10 mg/kg bid) was continued with only temporary control of seizures and she was discharged after a 14-days hospitalization. During a 4-month follow-up, she had 3 episodes of acute respiratory infections and one of them required hospitalization.

3. Discussions

Since its description by Aicardi few cases have been described in the literature but new cases are still reported. Etiology remains unknown [4], [11].

The overall incidence of Aicardi syndrome is 1:105 000 cases and its diagnosis is challenging for the majority of clinicians [14].

Seizures in Aicardi syndrome are diagnosed around the third month of life in the majority of cases and are unresponsive to antiepileptic treatment. Although infrequent, control of seizures has been reported in the literature [1], [7].

Chorio-retinal lacunae are present in almost 50% of the cases. The size of chorio-retinal lacunae has been related to prognosis and small lacunae are considered to be an indicator of a better prognosis, better development of motility and better achievement of language skills [15]. The patient described here did not have chorioretinal lacunae, but she had other ocular malformations (agenesis of right eye, coloboma, agenesis of left optic nerve).

In our patient, the diagnosis was based on two classic features (agenesis of corpus callosum and infantile spasms) in association with major features (enlargement of third ventricle, coloboma) along with supporting features (microphtalmia, split-brain EEG).

The gastro-intestinal complications in the Aicardi syndrome includes constipation, gastroesophageal reflux, diarrhea and feeding difficulties and are considered to be the second problem to be managed after seizures [12]. The presence of cheilognatopalatoschizis aggravated the severity of these complications in our patient.

The prognosis in Aicardi syndrome is reserved in the majority of cases, especially due to complications and recurrent respiratory infections [20].

4. Conclusions

The authors report a case of a 3 months old girl with Aicardi syndrome characterized by very early-onset of seizures, cheilognatopalatoschizis and absence of chorioretinal lacunae and an early diagnosis by a multidisciplinary team approach.

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