Aicardi syndrome – the elusive mild case

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Aicardi syndrome is a severe congenital disorder characterised by infantile spasms, chorioretinal lacunae, and agenesis of the corpus callosum. We present the case of a 10-year-old girl whose symptoms included a poorly controlled seizure disorder, typical lacunar retinopathy, partial hypoplasia of the corpus callosum, and mild developmental delay. This case alerts ophthalmologists to the presence of a mild form of the typical Aicardi syndrome that can be diagnosed by the characteristic chorioretinopathy. Our patient's symptoms also raise important questions about genetic counselling and other undiagnosed cases of infantile spasms.

Case report

A 3.3 kg girl was born to healthy parents in the 37th week of gestation. The infant had no neonatal problems and appeared to develop normally until 5 months of age. Two older siblings were both healthy.

Over the next few months, she developed infantile spasms, and the parents noted that her development appeared to have stopped. At 8 months of age, she was admitted to The Hospital for Sick Children, Toronto, Ontario, Canada (HSC), for investigation. Neurological examination revealed normal (or slightly decreased) muscle tone and normal deep tendon reflexes. On ocular examination, she had numerous yellow lesions in the fundi that spared

the macula. Clinically, her vision appeared normal as she seemed to fix on and follow objects well.

The pattern of the EEG recordings was abnormal, asymmetric with an epileptogenic focus in the left hemisphere and some seizure activity in both hemispheres. There was no serological evidence of metabolic or infectious disease. A computed tomography (CT) scan of the head revealed mild asymmetric dilatation of the ventricles and no evidence of tuberous sclerosis. She was discharged with a diagnosis of infantile spasms of unknown cause.

Over the next 5 years, her seizures continued to occur once a day. Assessment at age 6 years showed significant developmental delay functioning at a 3½ to 4 year age level.

At age 10 years, she was re-evaluated at the HSC neurology clinic. Her seizures then occurred five to six times a day. Owing to her inattentiveness, she was classified as a slow learner at school. An EEG showed frequent spike activity in the left temporal lobe with secondary generalisations, suggesting a partial complex seizure disorder. A CT scan performed to rule out a focal lesion was thought to be within normal limits (Fig 1A).

She was referred to the neuro-ophthalmology service at HSC for another evaluation because of her history of retinal lesions. Her visual acuity was 20/400 in the right eye and 20/30 in the left eye. She had anisometropic hyperopia in the

Fig 1A

Fig 1B

Figure 1 (A) Computed tomogram (CT) of our patient's head indicating no significant abnormality compared with (B) CT scan of the head in a typical case of Aicardi syndrome. Note the parallel orientation of the ventricles indicating the absence of corpus callosum.

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Accepted for publication
26 January 1994

Fig 2A

Fig 2B

Figure 2 (A) Mild chorioretinal lacunae evident in our patient, compared with (B) typical presentation of chorioretinal lacunae.

right eye, which probably resulted in her right amblyopia. She was orthophoric and had a normal anterior segment examination. Examination of the fundi revealed chorioretinal lacunae scattered around the posterior pole that were more marked in the left eye than the right eye (Fig 2A) and did not involve the maculae. Optic nerves were normal.

Based on these findings, the diagnosis of a variant or mild expression of Aicardi syndrome was considered. Since no clear abnormality of the corpus callosum was found on CT scan, a magnetic resonance (MR) scan was obtained. The MR scan did show hypoplasia of the anterior corpus callosum (Fig 3A). Vertebral column x rays showed mild lumbar scoliosis and a hypoplastic right 12th rib.

Comment

The combination of findings of infantile spasms, partial agenesis of the corpus callosum (Figs 1B, 3B), and typical chorioretinal lacunae (Fig 2B) in a female child fulfils the diagnostic criteria for Aicardi syndrome.¹ Costovertebral anomalies as well as marked psychomotor retardation are common in these patients.² The vertebral

Fig 3A

Fig 3B

Figure 3 (A) Magnetic resonance (MR) scan of our patient's head indicating hypoplasia of anterior corpus callosum (see arrow) compared with (B) MR scan of the head in a typical case of Aicardi syndrome. Agenesis (almost total) of corpus callosum.

anomalies in our patient, although mild, support the diagnosis. The presence of mild developmental delay corresponds with the mild expression of the other findings.

The characteristic chorioretinal lacunae are unique to this syndrome and are therefore probably pathognomonic of the disease.² They are usually multiple, rounded, unpigmented, yellow white lesions. Their size varies from one tenth to three disc diameters, they are often clustered around the posterior pole, and are usually but not always bilateral. Other ocular abnormalities, such as colobomas of the optic nerve (44%)² and microphthalmos (20%)² have been described in patients with Aicardi syndrome.

In 1986, Chevrie and Aicardi reviewed 184 cases of patients diagnosed with Aicardi syndrome and noted that others had described infantile spasms and typical lacunae in six girls whose corpus callosum appeared normal from a CT scan.² Because magnetic resonance imaging (MRI) was not available to illustrate accurately the corpus callosum, they were not able to differentiate among a true mild expression of the syndrome (with partial agenesis of the corpus callosum), an incomplete form of the syndrome (normal corpus callosum), or a different syndrome altogether. The MR scan, in our case showing partial agenesis of the corpus callosum, confirms the diagnosis of a mild expression of Aicardi syndrome.

However, two questions arise. The first is whether the lesions, though mild and sparse, do in fact signal the presence of Aicardi syndrome. Our patient has been reviewed by several paediatric ophthalmologists; we are convinced that her lesions are a mild expression of the lesions characteristic of the syndrome. The second is the partial agenesis of the corpus callosum. The corpus callosum normally develops from the anterior to posterior direction. In our case, therefore, hypoplasia of the anterior corpus callosum with a normal posterior section, suggests that the corpus callosum initially developed and then regressed. However, there was no other evidence of focal cerebral atrophy. Since the exact nature of the corpus callosum malformation in the syndrome remains unclear, the atypical nature of our patient's corpus callosum does not rule out the diagnosis of Aicardi syndrome.

The prognosis is generally poor for children with the typical Aicardi syndrome. Although some degree of vision is present in most patients, psychomotor retardation is usually severe, and

their mortality is probably high. However, follow up has been limited. Our patient would certainly be expected to have a much more favourable prognosis. Her biggest handicap appears to be her developmental delay of 4 to 5 years and her marked inattentiveness.

The genetic component of the disease will become an important issue should she have children of her own in the future, if she is indeed fertile. If Aicardi syndrome is an X linked dominant disease, as is thought to be the case,³ 50% of her offspring could be expected to carry the abnormal X chromosome. At present, genetic studies for our patient are not available, so we have no way of knowing whether she is an example of incomplete penetration or whether her genetic defect is an atypical one. We therefore cannot predict the effect of her disease on her offspring.

The triad of typical chorioretinal lacunae, infantile spasms, and hypoplasia of the corpus callosum in a girl with only mild developmental delay has led us to a diagnosis of a mild expression of Aicardi syndrome. It is important that ophthalmologists be aware of the existence of these mild cases since they are the ones which can secure the diagnosis by identifying the chorioretinal lesions pathognomonic of Aicardi syndrome.

This paper was prepared with the assistance of Medical Publications, The Hospital for Sick Children, Toronto, Ontario, Canada.

- 1 Aicardi J, Lefebvre J, Lerique-Koechlin A. A new syndrome: spasms in flexion, callosal agenesis, ocular abnormalities. *Electroencephalogr Clin Neurophysiol* 1965; 19: 609-10.
- 2 Chevrie JJ, Aicardi J. The Aicardi syndrome. In: Pedley TA, Meldrum BS, eds. *Recent advances in epilepsy*. Vol 3. Edinburgh: Churchill Livingstone, 1986: 189-210.
- 3 Neidich JA, Nussbaum RL, Packer RJ, Emanuel BS, Puck JM. Heterogeneity of clinical severity and molecular lesions in Aicardi syndrome. *J Pediatr* 1990; 116: 911-7.

British Journal of Ophthalmology 1994; 78: 496-497

Elevation of the right ptotic eyelid with clenching the teeth

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Accepted for publication
1 February 1994

The jaw-winking phenomenon of Marcus Gunn is typically seen as a retraction of one upper eyelid on opening the jaw or moving it to the side opposite the affected eye.¹⁻³ Elevation of a ptotic eyelid with clenching of the teeth, however, may be uncommon.³ We recently examined a patient with such a rare condition.

Case report

A 5-year-old girl was seen at our clinic with an unusual eyelid retraction in April 1993. The

patient was born after an uneventful delivery on 6 August 1987. Her mother reported that the pregnancy also had been uneventful. The patient's paradoxical eyelid retraction was first noticed at age 7 months; the condition has appeared unchanged since then. She has been treated for atopic dermatitis since she was 4 years of age. No trauma to the face or eyes has been noted. Her family history was non-contributory.

On examination, the patient's visual acuity was 1.2 in both eyes. The eye positions were orthophoric, and the eye movements were