Gomez-López-Hernandez syndrome: the triad of cerebello-trigemino-dermal dysplasia

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DESCRIPTION

A 14-year-old female presented with progressive diminution of vision in the right eye. She had left-sided loss of vision since 1 year of age. The patient had aggressive behaviour with irrelevant talking. She was intellectually disabled and had a history of delayed motor and language milestones. On examination, she was short-statured and had craniofacial abnormalities in the form of midface retrusion, flat nasal bridge, low-set ears, widened philtrum, thin upper lip vermilion and hypertelorism (figure 1A). The left eye was phthisic and corneal opacity was seen in the right eye (figure 1B,C). Bilateral corneal reflexes were absent. There was partial sensory loss in the distribution of ophthalmic division (V1) of bilateral trigeminal nerves. Bilateral parietotemporal alopecia (figure 1D,E) and forehead scarring (figure 1A) were present. Cerebellar signs were present in the form of difficulty in tandem gait and dysmetria.

MRI of the brain revealed a small posterior fossa. Vermis and falx cerebelli were absent with fusion of bilateral hypoplastic cerebellar hemispheres and midline continuation of folia suggestive of rhombencephalosynapsis (RES) (figure 2A,B). There was fusion of bilateral superior cerebellar peduncles and thalami (figure 2C,D). Bilateral middle cerebellar peduncles were anteroposteriorly directed.

Figure 1 (A) Craniofacial abnormalities are seen in the form of midface retrusion, hypertelorism and depressed nasal bridge (curved arrow), widened philtrum (asterisk) and thin upper lip vermilion. Scarring is seen on forehead (black arrows). (B) Right corneal opacity and (C) left phthisis bulbi are seen. (D, E) Bilateral parietotemporal alopecia is seen. (F) Lateral skull radiograph shows brachyturicephaly with calvarial thickening.

Figure 2 (A) T2-weighted axial image shows small posterior fossa with small cerebellum, absent vermis and midline continuation of cerebellar folia (thin white arrows). Bilateral middle cerebellar peduncles are anteroposteriorly directed (black arrows). Left eye is phthisic with distorted globe (thick white arrow). (B) Fractional anisotropy directional map shows left to right directed red fibres extending across cerebellum (asterisk). (C) T1-weighted axial image shows fusion of bilateral superior cerebellar peduncles (black arrow). (D) T1-weighted coronal image shows midline fusion of thalami (asterisk). (E) Axial reconstruction of three-dimensional Fluid-attenuated inversion recovery (FLAIR) image shows hypoplastic bilateral trigeminal nerves (L>R) (arrows). (F) T1-weighted sagittal image shows abnormal fourth ventricle with bumpy roof and low-lying fastigium (black arrow).

Bilateral trigeminal nerves were small in size (L>R) (figure 2E). The fourth ventricle was abnormal with low-lying fastigium (figure 2F). Brachyturicephalic skull with diffuse calvarial thickening was seen (figure 1F).

The patient's clinical and imaging findings suggested a diagnosis of Gomez-López-Hernandez syndrome (GLHS), also known as cerebello-trigemino-dermal dysplasia. It is a rare neurocutaneous syndrome, and approximately 73 cases have been reported to the best of our knowledge.¹ GLHS is characterised by triad of RES, partial alopecia and trigeminal anaesthesia. However, trigeminal anaesthesia is present only in 50%–60% of cases. In the absence of trigeminal anaesthesia, the presence of other craniofacial abnormalities can also suggest the diagnosis of GLHS.^{2,3} Craniofacial abnormalities include brachyturicephaly, midface retrusion, hypertelorism, widened philtrum and low-set ears. Other clinical features include intellectual disability, motor delay, strabismus, ataxia, hypotonia, seizures and characteristic head shaking in 'figure-of-eight' pattern. Our patient did not have seizures or any stereotypical movements. Trigeminal anaesthesia

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Images in...

can cause repeated unaware injuries which can lead to forehead scarring, corneal opacities and phthisis bulbi in severe cases. Aqueduct stenosis, hydrocephalus, absent septum pellucidum, absent olfactory bulbs, absent or hypoplastic trigeminal nerves, and dentate or tonsillar fusion can also be seen. Other systemic abnormalities such as absent kidney, neurogenic bladder, cryptorchidism and hypoplastic labia majora can also be associated.

The genetic basis of GLHS is still unknown. Defects in dorso-ventral patterning can give rise to RES. GLHS is the most common syndromic association of RES.⁴ Insult to the embryo at

28–44 days can cause developmental arrest of part of ectoderm from which alar plate of rhombencephalon, overlying epidermis, trigeminal nucleus and trigeminal placodes arise, which can give rise to constellation of findings of GLHS.⁵ There have been reports of GLHS in children of mothers with misoprostol exposure in first trimester, substance abuse, assisted reproduction and maternal diabetes, which suggest the role of environmental and epigenetic mechanisms in its pathogenesis.^{1 6}

Patient's perspective

Our daughter, who is the eldest among four siblings, had difficulty in learning walking and language. Her left eye got damaged when she was 1 year old. Now she is having vision problems in the right eye also. She falls frequently and has had many injuries. We had taken her to several doctors who had asked us to go to higher centres for treatment, but because of financial issues, we could not provide her treatment. Now we want to at least save her right eye so that her quality of life does not worsen further.

Learning points

- ▶ Gomez-López-Hernandez syndrome or cerebello-trigemino-dermal dysplasia is a neurocutaneous syndrome characterised by rhombencephalosynapsis, partial alopecia, and trigeminal anaesthesia or other craniofacial abnormalities.
- ▶ Trigeminal anaesthesia can cause loss of vision secondary to repeated unaware eye injuries, leading to corneal opacities or phthisis bulbi in severe cases.

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