www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 79.54
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i10.13

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Joubert Syndrome Related Disorder (JSRD): a Rare Case Report Presenting as Postpartum Quadriparesis

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Abstract
Joubert syndrome and related disorders (JSRD) are a spectrum of disorders that have some, but not all, features in common. Joubert syndrome (JS) is a rare autosomal recessive of central nervous system characterized by hypoplasia of the cerebellar vermis, malformed brain stem. It may be accompanied by other organs' disorders such as ocular, skeletal, hepatic, renal and others. Here, we report a 32 year old educated, married, female who presented with quadriparesis following FTNVD and history of delayed developmental milestones, intellectual disability with distinctive facial features. She was diagnosed on the basis of MRI findings which revealed molar tooth shaped brain stem and batwing shaped fourth ventricle along with spina bifida and dorsal meningocele with disc protusion causing cord compression at cervical level.
Keywords: *Joubert syndrome and related disorders (JSRD), MTS, Quadriparesis, Adult Presentation.*

Introduction

Joubert syndrome is a rare brain malformation characterized by the absence or underdevelopment of the cerebellar vermis - an area of the brain that controls balance and coordination - as well as a malformed brain stem (molar tooth sign). The most common features of Joubert syndrome in infants include abnormally rapid breathing (hyperpnea), decreased muscle tone (hypotonia), abnormal eye movements, impaired intellectual development, and the inability to coordinate voluntary muscle movements (ataxia). Physical deformities may be present, such as extra fingers and toes (polydactyly), cleft lip or palate, and tongue abnormalities. Kidney and liver abnormalities can develop, and seizures may also occur. 21 causative genes have been identified so far, all of which encode for proteins of the primarycilium or its apparatus. The primary cilium is a subcellular organelle that has key roles in development and in many cellular functions, making Joubert syndrome part of the expanding family of ciliopathies. Many cases of Joubert syndrome appear to be sporadic (not inherited). In most other cases, Joubert syndrome is inherited in

an autosomal recessive manner. Estimates of the incidence of JSRD range between 1/80,000 and 1/100,000 live births.[1] Due to the variety of genes this disorder is affected by, it is likely to be under-diagnosed. It is commonly found in Ashkenazi Jewish, French-Canadians, and Hutterite ethnic populations.

Here we report a case of Joubert syndrome with cervical cord compressive myelopathy in postpartum period due to disc protrusion. We take this as a very important case to be reported as patient with Joubert syndrome with such presentation is kind extremely rare and probably has not been reported yet. Also, acute neurological deterioration causing quadriparesis secondary to cervical disc herniation an uncommon occurrence.

Case Report

A 32-year-old educated, married, female presented with cervical pain and gradually progressive weakness in all four limbs which started on 2nd postpartum day following full term normal vaginal delivery and progressed over 10 days. There was associated numbness and weakness in the arms, hands, and fingers. History of bladder bowel incontinence was present. No history of band like sensation. There was no history of preceding fever, respiratory tract infection or gastroenteritis and trauma. There was history of development delay and mild intellect disabilities, but her day to day activities were normal. There was no history of seizures and there was no history of neurologic or genetic problems in other family members

On examination patient was conscious oriented, she had facial dysmorphism in the form of prominent forehead, fish like mouth, short neck and also had flat foot.

On Neurological examination muscle power was 3/5 in upper limbs and 1/5 in lower limbs. Generalized spasticity with brisk deep tendon reflexes, extensor bilateral planters and ankle clonus was found. Pain and position sense sensation were intact. No sensory level. Cerebellar signs were absent. No Spine deformity was visible and cranial nerves were intact. Ocular and fundus examination was normal. Rest of the systemic examination was normal.

Investigations revealed anemia, TLC count (10,600/cumm), peripheral smear showed microcytic hypochromic with macrocytic cells along with hyper segmented neutrophils suggestive of dimorphic anemia. Renal and liver functions were normal. Urine routine examination was normal and culture showed no growth.

USG Abdomen suggested mild hepatomegaly. Electrocardiogram and Chest X-ray were normal.

Soon MRI brain (FLAIR and DWI) was done which revealed MRI brain revealed dysplastic superior vermis and cerebellar hemispheres with molar tooth shaped brain stem and batwing shaped fourth ventricle. MRI cervical spine was suggestive of spina bifida at C1-C2 level with dorsal meningocele. Thickening of posterior longitudinal ligament with disc protrusion causing compression on underlying thecal sac and cord without any nerve root "molar tooth" shaped brain stem, batwing shaped 4th ventricle.

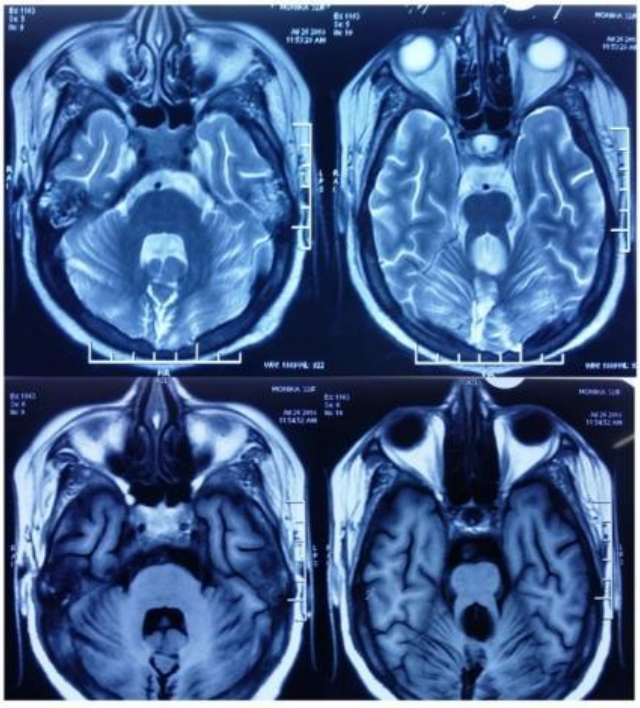

Fig. 1 T1weighted and T2 weighted images showing

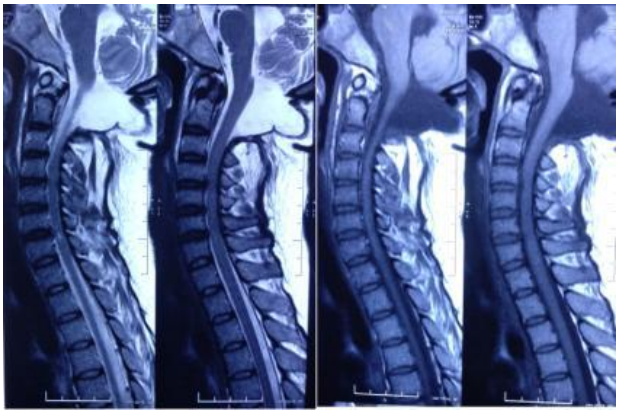

Fig. 2 T1 and T2 weighted image in sagittal plane showing spina bifida with meningocele at C1 –C2. Posterior disc protrusion at C4-C5 causing cord compression.C5-C6 posterior disc protrusion.

Compression at C4-C5. Tiny intramedullary T2 hyperintensity in right hemi cord representing early syrinx formation.Rest of the spine was normal.

The patients received treatment as per protocol for compressive myelopathy. IV methylprednisolone 750mg/ day for 5 days was given, thereafter patient put on oral steroids on tapering doses. Patient was advised to wear soft cervical collar to allow the muscles of the neck to rest and limit neck motion. Orthopedics/ spine surgery and physiotherapy and rehabilitation department consultation was taken, and appropriate surgical intervention was due to be taken. Patients vitals were stable throughout her stay for 12 days. Later the patient was transferred to spine surgery unit for further intervention as needed.

Fig 3. T2 weighted sagittal image of brain showing dysplastic cerebellar vermis and meningocelel.

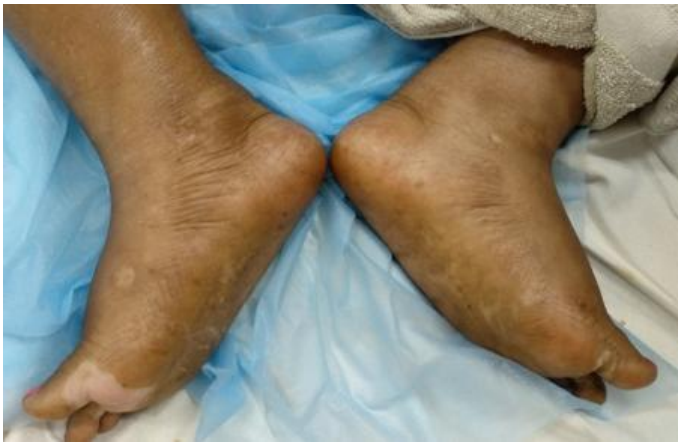

Fig 4 Flat foot

Discussion

Joubert syndrome is a rare autosomal recessive congenital disorder. Marie Joubert and associates in 1969 were the first to describe this syndrome. It is associated with failure of fibre decussation in the superior cerebellar peduncles and pyramidal tracts and varying degrees of vermian agenesis. As a result, the thickened superior cerebellar peduncles run a more horizontal course between the brainstem and cerebellum. More than 10 different gene mutations have been associated with Joubert syndrome, making it a very heterogeneous disorder. The term "Joubert syndrome and related disorders" (JSRD) refers to those individuals with JS who have additional clinical findings. JSRD are categorized into six phenotypic subgroups: Pure JS, JS with ocular defect, JS with renal defect, JS with oculorenal defects, JS with hepatic defect, and JS with orofaciodigital defects .So, patients may come with several systemic associations such as coloboma, retinal dysplasia, multicystic dysplastic kidney, hepatic fibrosis and polydactyly. Commonly patients present with an abnormal respiration pattern at birth and during infancy. Individuals who survive have ataxia, hypotonia, nystagmus, oculomotor apraxia and mental retardation. The presence of the molar tooth sign and vermian hypoplasia is a hallmark for the diagnosis of Joubert syndrome. The molar tooth sign is a result of abnormally oriented thickened superior cerebellar peduncles and a widened interpeduncular fossa. The fourth ventricle is enlarged and distorted, giving rise to the batwing appearance. Other findings which include

morphological abnormalities of the brainstem and cerebellum, corpus callosaldysgenesis, posterior fossa enlargement, increased retro-cerebellar CSF, ventriculomegaly and migration disorders are present to varying degree. Patients with Joubert syndrome need to enter a diagnostic workflow and undergo regular follow-up examinations to ensure proper assessment and management of multiorgan complications. Many patients die in infancy or childhood, but some survive into adulthood with variable cognitive and motor impairments, depending on whether the cerebellar vermis is entirely absent or partially developed.

Most of case reported till now are in pediatric populations only a few cases are reported in adults with Joubert syndrome related disorders. So, the clinical behavior this heterogenous disorder and its complications in adults not so clear. Here in in this case of a 32-year female with background of Joubert syndrome presented with quadriparesis. Based on MRI findings and her body dysmorphic features further enquiry was done into her past and childhood history to corroborate the diagnosis. Though her developmental history could not be followed up entirely in detail levels, but definitely there is history of delayed milestones, abnormal eye moments and abnormal respirations in childhood. Mild to severe intellectual disability is common, with several patients being able to attend special schools, learn specific job skills and work in protected conditions. However, it must be stressed that intellectual deficit is not a mandatory feature of JSRD and exceptional cases may have borderline or even normal intellect.

Skeletal abnormalities including skeletal dysplasia has been described in Joubert Syndrome. Skeletal dysplasia's especially in spondyloepiphyseal dysplasia predisposes patients for disc herniation.[2] The immediate postpartum presentation in this female patient points towards jobert syndrome related skeletal dysplasia as part of JSRD predisposing disc prolapse leading to quadriparesis It is plausible that such disc lesion could also be precipitated in predisposed individual by stress of labour.

Conclusions

Joubert syndrome is a rare autosomal recessive disorder, characterized by ataxia, psychomotor retardation, ocular and respiratory abnormalities related to dysgenesis of cerebellar vermis and mesencephalon. Genetic counselling is important in a family having JS. In addition to prenatal and child Joubert syndrome cases that were reported previously here an adult patient with an extremely rare presentation is reported. Due to lack of any reported data on postpartum adult patient with Joubert syndrome predisposing to quadriparesis due to cervical disc prolapse; this case report can conceivably be very valuable as a guide to other clinical practitioners.

References

1. Brancati F, Dallapiccola B, Valente EM. Joubert Syndrome and related disorders. *Orphanet Journal of Rare Diseases*. 2010;5:20. doi:10.1186/1750-1172-5-20
2. Romani M, Micalizzi A, Valente EM. Joubert syndrome: congenital cerebellar ataxia with the "molar tooth." *Lancet neurology*. 2013;12(9):10.1016/S1474-4422(13)70136-4. doi:10.1016/S1474-4422(13)70136-4.