



Figure 1. MRI of the brain at 2 months. Sagittal (A), coronal (B) and axial (C) sections showing agenesis of corpus callosum, colpocephaly and periventricular necrosis of white matter.

reducible, and inguinal hernia. He was admitted with the suspicion of Vici syndrome.

Laboratory investigations revealed microcytic and hypochromic anemia. Renal and coagulation profiles were unremarkable. alanine aminotransferase was slightly elevated at 91 U/l (normal up to 45 U/l). Aspartate aminotransferase, bilirubin, creatine kinase and lactate dehydrogenase were normal. C-reactive protein and erythrocyte sedimentation rate were high at 62.5 mg/l (normal < 5 mg/l) and 21 mm first hour (normal 0-9 mm for males), respectively. The serological tests for toxoplasma, rubella, cytomegalovirus and herpes simplex were all normal. Chest X-ray and abdominal ultrasonography were unremarkable. Echocardiography was done but found unremarkable. computed tomography scan of brain showed colpocephaly and high riding third ventricle, suggestive of corpus callosum agenesis. Magnetic resonance imaging (MRI) of brain confirmed agenesis of corpus callosum with periventricular necrosis of white matter and enlargement of extra axial cerebrospinal fluid spaces (Figure 1A-C).

Patient was treated with intravenous antibiotics and was discharged on anti-epileptics. At 4 and 5 months of age, he again presented with respiratory infection and urinary tract infection respectively, which were treated with intravenous antibiotics. At 6 months of age, he presented to emergency department with high grade fever and bleeding from nose. He had severe respiratory distress. He went into cardiopulmonary arrest and could not be revived and eventually died at the age of 6 months.

Although immunological investigations and confirmatory genetic testing could not be performed on the patient, the clinical picture and radiological findings were consistent with the diagnosis of Vici syndrome. This case is the first reported case of Vici syndrome in Pakistan.

Discussion

Vici syndrome is a rare, autosomal recessive multisystem disorder occurring because of defects in autophagy

resulting from recessive mutations in *EPG5* gene on chromosome 18q12.3 [3,4]. It is characterized by agenesis of corpus callosum, oculocutaneous hypopigmentation, immunodeficiency resulting in recurrent infections, cataracts, and cardiomyopathy. Other variable manifestations include developmental delay, seizures, neuromuscular abnormalities, sleep abnormalities, optic nerve atrophy, sensorineural hearing loss, and renal tubular acidosis described in a few cases [5-8]. Additional features include mildly dysmorphic facial features, cleft lip and palate and syndactyly [2,9]. A long philtrum has previously been described only in one patient [10]. Vici syndrome is a relentlessly progressive condition and survival beyond the first decade has not been reported.

The findings in our patient are consistent with the features published in a review of 50 cases where agenesis of corpus callosum (100%), developmental delay (100%), recurrent, severe infections (100%), hypopigmentation (95%), and microcephaly (90%) were the most common shared features [4]. Our case further strengthens the consideration of the diagnosis of Vici syndrome in patients presenting with the above findings. Cataracts and cardiomyopathy are also main features of Vici syndrome. However, according to the review by Byrne et al. [4], the prevalence of cataract and cardiomyopathy was 76% and 82%, respectively. Our patient also did not have these features, which may also be because cataracts and features of cardiomyopathy usually present later in time. Seizures which were found to be in 59% of patients according to the above-mentioned study were present in our patient. Our patient also had left inguinal hernia which has not been described in any previous case. Its specificity to Vici syndrome, thus, cannot be established. Our patient also had a horizontal nystagmus and a long philtrum which have been described in previous studies [10,11].

Brain MRI, echocardiography, chest X-ray, abdominal ultrasound, complete blood picture, and C-reactive protein are certain necessary investigations for the diagnosis of Vici syndrome. Furthermore, additional

investigations to be performed in all suspected cases include Electroencephalography (EEG), slit lamp examination, fundoscopy, immunological profile, and genetic testing which could not be performed in our case because of financial constraints.

There is currently no cure for Vici syndrome and management is mainly supportive and directed to the relief of symptoms resulting from involvement of multiple organs and control of infections [12]. Most common causes of death in these patients are severe sepsis and cardiomyopathy thus decreasing the overall life span of patients [1].

Vici syndrome is an inherited as an autosomal-recessive disease. Genetic counseling should be offered to all families in whom a diagnosis of Vici syndrome has been established.

Our patient is the first reported case of Vici syndrome in Pakistan. Due to financial constraints and lack of specialized genetic testing for this syndrome in Pakistan, it is highly likely that it is rather under reported. This case will serve as a means to helping clinicians with the diagnosis based on clinical findings and will help strengthen the diagnostic facilities available for rare genetic disorders.

The clinical phenotype of Vici syndrome is thus diverse and new features are being added with every reported case. The diagnosis of Vici syndrome should be considered in patients presenting with the above-mentioned features and genetic counseling of parents must be ensured once a final diagnosis of Vici syndrome has been made.

Conclusion

In conclusion, Vici syndrome is a rare, autosomal recessive disorder with diverse clinical manifestations. However, agenesis of corpus callosum, recurrent infections, hypopigmentation, severe developmental delay, and microcephaly remain the most common shared features amongst all cases of Vici syndrome reported so far.

What is new?

Vici syndrome is a rare genetic disorder, with this case being the first reported case in Pakistan. The patient in this study shared features of agenesis of corpus callosum, developmental delay, recurrent infections, hypopigmentation, microcephaly and seizures reported in previous case reports on Vici syndrome.

List of Abbreviations

MRI Magnetic resonance imaging

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

No funding was obtained.

Consent for publication

Written informed consent was taken from the guardian of the patient to publish this case.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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Summary of the case

1	Patient (gender, age)	Male, 2 months old
2	Final diagnosis	Vici syndrome
3	Symptoms	Seizures, developmental delay, microcephaly, hypopigmentation and recurrent infections
4	Medications	Medications for treating infections and seizures
5	Clinical procedure	Medical treatment
6	Specialty	Pediatrics