# Vici Syndrome

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Vici syndrome is a severe disorder that begins early in life and affects many body systems. It is characterized by abnormalities of the brain, immune system, heart, skin, and eyes. Other organs and tissues are less commonly affected.

genetic conditions

## 1. Introduction

A characteristic feature of Vici syndrome is a brain abnormality called agenesis of the corpus callosum, in which the tissue that connects the left and right halves of the brain (the corpus callosum) fails to form normally during the early stages of development before birth. Other brain abnormalities can occur in Vici syndrome, including underdevelopment of a region of the brain known as the pons (pontine hypoplasia) and reduced myelin, which is a fatty substance that covers and protects nerve cells. In addition to problems with brain development, breakdown (degeneration) of brain tissue may occur over time, resulting in an unusually small head size (microcephaly).

The brain problems contribute to profound developmental delay in individuals with Vici syndrome. Affected infants have weak muscle tone (hypotonia). Few are able to roll, and they may lose this skill when they get older. None are able to sit or walk. In addition, affected children cannot speak.

Another characteristic feature of Vici syndrome is impaired immune function (immune deficiency), which leads to recurrent infections that can be life-threatening. Respiratory infections are most common, and gastrointestinal and urinary tract infections are frequent.

A potentially life-threatening heart condition called cardiomyopathy is common in children with Vici syndrome. This condition, which worsens over time, makes it difficult for the heart to pump blood efficiently. Some affected children also have heart defects that are present from birth (congenital).

Other key features of Vici syndrome include skin and hair that are lighter in color than that of family members and other people with the same ethnic background (hypopigmentation), and clouding of the lenses of the eyes (cataracts) or other eye abnormalities, which may reduce vision.

Other, less-common signs and symptoms of Vici syndrome include seizures; hearing loss caused by abnormalities of the inner ear (sensorineural hearing loss); an opening in the upper lip (cleft lip) with or without an opening in the

roof of the mouth (cleft palate) or other unusual facial features; and abnormal function of the thyroid, liver, or kidneys. Many affected infants grow and gain weight more slowly than expected.

Due to the severity of the condition, most people with Vici syndrome do not survive beyond age 5.

## 2. Frequency

Vici syndrome is a rare disorder of unknown prevalence. Approximately 100 individuals have been diagnosed with this condition.

## 3. Causes

Mutations in the *EPG5* gene cause Vici syndrome. This gene provides instructions for making a protein that is involved in a cellular process called autophagy. Cells use this process to recycle or break down worn-out or unnecessary cell parts. Autophagy also helps cells use materials most efficiently when energy demands are high. In addition to its role in autophagy, the EPG5 protein aids in the body's immune response to foreign invaders such as bacteria and viruses.

The *EPG5* gene mutations that cause Vici syndrome lead to production of abnormal EPG5 proteins that do not function. Without functioning EPG5 protein, foreign invaders do not trigger immune reactions, which leads to recurrent infections. In addition, autophagy is impaired. Researchers speculate that problems with autophagy disrupt the normal development and survival of cells in the brain and other organs and tissues that require large amounts of energy; however, they do not fully understand how the impairment leads to signs and symptoms of Vici syndrome.

### 3.1 The gene associated with Vici syndrome

- EPG5

## 4. Inheritance

This condition is inherited in an autosomal recessive pattern, which means both copies of the gene in each cell have mutations. The parents of an individual with an autosomal recessive condition each carry one copy of the mutated gene, but they typically do not show signs and symptoms of the condition.

## 5. Other Names for This Condition

- absent corpus callosum cataract immunodeficiency
- corpus callosum agenesis-cataract-immunodeficiency syndrome
- Dionisi Vici Sabetta Gambarara syndrome

- Dionisi-Vici-Sabetta-Gambarara syndrome
- immunodeficiency with cleft lip/palate, cataract, hypopigmentation and absent corpus callosum

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