Igenomix®

Caudal Regression Syndrome

Precision Panel
Prenatal

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Definition

Caudal Regression Syndrome (CRS), also known as Caudal Dysgenesis Syndrome or Sacral Agenesis, is a rare congenital disease characterized by malformations of the vertebral column, spinal cord and lower limbs secondary to cascading effects of abnormal gastrulation before the fourth week of fetal development.

Overview

That fact causes several maldevelopment of the caudal half of the body with variable involvement of the gastrointestinal, genitourinary, skeletal and nervous system, including sacral agenesis.

Caudal regression syndrome may also be associated with high bony lesions and an open dysraphic state, with a spinal meningocele, and truncation of the spinal cord. In these cases, the most common feature is an abnormal notochord development. The clinical presentation of caudal regression syndrome is highly variable, depending on the level of the spinal lesion. The mode of inheritance is mainly autosomal dominant.

The Igenomix Caudal Regression Syndrome Precision Panel can be used to make an accurate and directed diagnosis as well as a differential diagnosis of imperforate anus ultimately leading to a better management and prognosis of the disease. It provides a comprehensive analysis of the genes involved in this disease using next-generation sequencing (NGS) to fully understand the spectrum of relevant genes involved.

Specialties involved

Prenatal

Indications and Clinical Utility

The Igenomix Caudal Regression Syndrome Precision Panel is indicated for those patients with a clinical diagnosis or suspicion presenting with or without the following manifestations:

VACTERL: Vertebral, Anorectal, Cardiac, Tracheo-Esophageal fistula, Renal and Limb anormalies.
OEIS: Omphalocele, cloacal Exstrophy, Imperforate anus, Spinal malformation.
Sacral agenesis
Long bone deformities
Oligodactyly/Polydactyly
Impaired urinary tract development
Ambiguous genitalia
Talipes equinovarus
Omphalocele

The clinical utility of this panel is:
- The genetic and molecular confirmation for an accurate clinical diagnosis of a symptomatic patient.
- Early initiation of multidisciplinary treatment including surgical intervention such as transureteroureterostomy, cutaneous vesicostomy and colostomy. Pharmacological therapy in form of

anticholinergic drug administration is a good option to treat urological disorder, and Human Growth Hormone to provide with partial function of the lower limbs. Psychological therapy and follow up is also required in order to improve quality of life.
- Risk assessment and genetic counselling of asymptomatic family members according to the mode of inheritance.
- Improvement of delineation of genotype-phenotype correlation.

Diagnostic Yield

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Next Generation Sequencing provides a high sensitivity to identify DNA sequence mutations in the coding regions of the genes included in the panel according to de DP20 coverage (see list of genes), including intronic boundaries.
This test has limited sensitivity to detect variants in some genes due to the presence of pseudogenes, regions of high homology, repeat expansions or small deletions or duplications (i.e. 1-2 exons)

Related Genes

Gene	OMIM Diseases	Inheritance
CCL2	· Neural tube defects	AD
CDX2		
CYP26A1		
FUZ	· Caudal regression sequence · Neural tube defects	AD
MNX1	· Currarino syndrome · Currarino syndrome	AD
TBXT	· Neural tube defects	AD, AR
VANGL1	· Caudal regression sequence · Neural tube defects · Sacral defect with anterior meningocele	AD
VANGL2	· Neural tube defects	AD

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