

Brief Note on Factors Causing Genetic Disorders

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DESCRIPTION

Genetic disorders are a type of disorder that results from changes or mutations in an individual's DNA. These disorders can be caused by various factors, including mutations, changes in chromosome number or structure, and environmental factors.

Causes of genetic disorders

Mutations: Mutations are the most common cause of genetic disorders. A mutation occurs when there is a change in the Deoxyribonucleic acid (DNA) sequence that alters the gene's function. These mutations can be inherited or occur spontaneously. Inherited mutations are passed down from a parent, while spontaneous mutations occur during cell division. Spontaneous mutations can occur at any time during an individual's life, and the risk of these mutations increases with age.

Chromosomal abnormalities: Chromosomal abnormalities are another common cause of genetic disorders. These abnormalities occur when there is an extra or missing chromosome or when there is a structural change in a chromosome. Chromosomal abnormalities can be inherited or occur spontaneously. Inherited chromosomal abnormalities are passed down from a parent, while spontaneous chromosomal abnormalities occur during cell division. Some common examples of chromosomal abnormalities include Down syndrome, Turner syndrome, and Klinefelter syndrome.

Environmental factors: Environmental factors can also cause genetic disorders. These factors can include exposure to toxins, radiation, or viruses. Exposure to these factors can cause mutations in an individual's DNA, leading to the development of a genetic disorder. For example, exposure to radiation can cause mutations in an individual's DNA that can lead to the development of cancer or other genetic disorders.

Multifactorial inheritance: Some genetic disorders are caused by a combination of genetic and environmental factors. These

disorders are known as multifactorial inheritance disorders. Examples of multifactorial inheritance disorders include diabetes, heart disease, and some types of cancer. These disorders can be influenced by environmental factors such as diet, exercise, and exposure to toxins.

Mitochondrial disorders: Mitochondrial disorders are genetic disorders that are caused by mutations in the mitochondrial DNA. Mitochondrial DNA is passed down from the mother to her offspring. These disorders can result in a variety of symptoms, including muscle weakness, developmental delays, and neurological problems.

Epigenetic changes: Epigenetic changes can also cause genetic disorders. Epigenetic changes refer to changes in gene expression that occur without changing the DNA sequence. These changes can be caused by environmental factors such as diet, exercise, and exposure to toxins. Epigenetic changes can also be inherited and passed down from one generation to the next.

Polygenic inheritance: Polygenic inheritance is a type of inheritance pattern where a trait is controlled by multiple genes. This type of inheritance can lead to the development of genetic disorders when there are variations in multiple genes that affect the trait. Examples of polygenic inheritance disorders include Alzheimer's disease, schizophrenia, and asthma.

CONCLUSION

In conclusion, genetic disorders can be caused by a variety of factors, including mutations, chromosomal abnormalities, environmental factors, multifactorial inheritance, mitochondrial disorders, epigenetic changes, and polygenic inheritance. Understanding the causes of genetic disorders can help researchers develop treatments and preventive measures for these disorders. It is essential to continue studying genetic disorders to improve our understanding of these conditions and develop effective therapies for affected individuals.

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