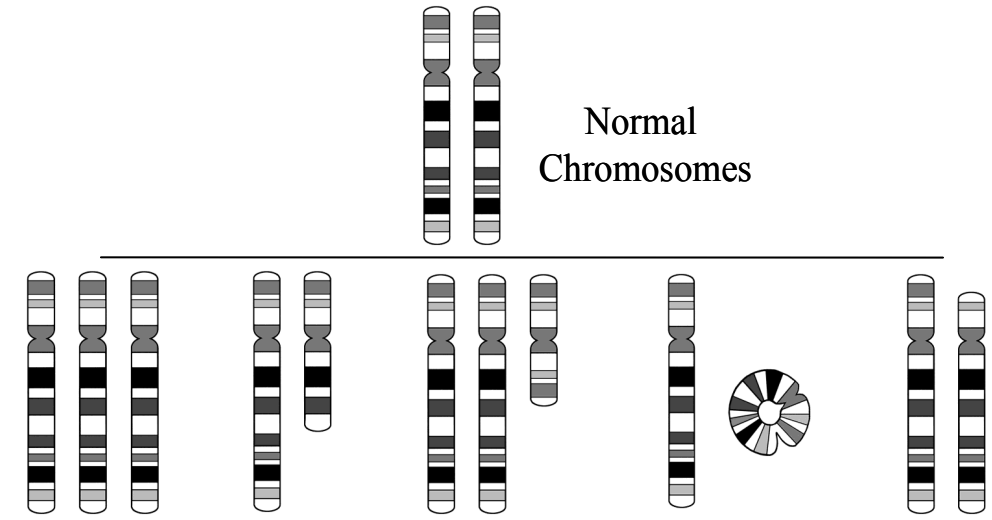
Proximal 18q-

There are five major conditions involving large changes of chromosome 18. Each of these conditions has a wide variety of characteristics. Additionally, each of the conditions can vary in severity. Although every child with a chromosome change is different, these pages provide a general idea of the medical and developmental concerns that are associated with the conditions.

If you are unfamiliar with genetic concepts, we encourage you to visit our website (www.chromosome18.org). There, you will find several podcasts that introduce genetic concepts. Understanding basic genetics will help give the information provided here more meaning.

The diagram below illustrates a pair of normal chromosome 18's. The conditions of chromosome 18 occur when there are changes in one of these two chromosomes. The five most common changes are shown below.



Our Mission:

To help individuals with chromosome 18 abnormalities overcome the obstacles they face so they might lead healthy, happy, and productive lives.

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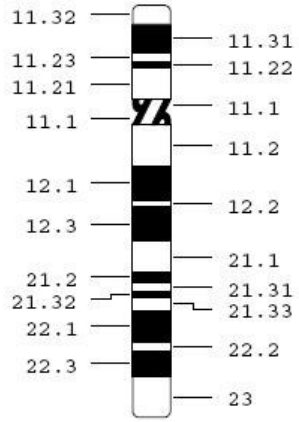
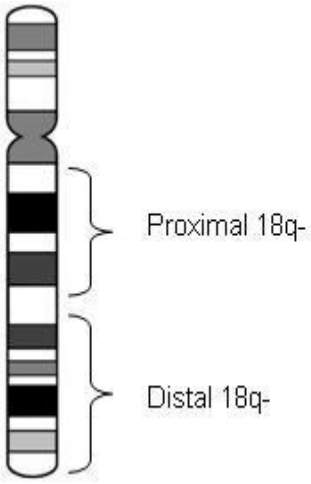
Background and Genetic Basis



This diagram shows how the bands of chromosome 18 are labeled.



The loss of part of the long arm of the chromosome causes 18q-. Deletions near the center of the chromosome are known as proximal deletions. Deletions near to and including the tip of the chromosome are known as distal deletions.

There are two groups of people with 18q deletions: those with deletions involving the end of the chromosome (known as distal deletions), and those with deletions closer to the centromere (known as proximal deletions). The goal of this article is to describe the major features of proximal deletions of 18q, which we will refer to as "proximal 18q-" for the rest of this article. The information contained here was obtained from a thorough review of the literature as well as from the experiences of the Chromosome 18 Clinical Research Center. This information may help you and your healthcare team make decisions about how to care for a person with proximal 18q-.

As you read through this article, remember that no two people with proximal 18q- are exactly alike. Also, remember that no one with proximal 18q- will have all of the features listed below. In addition, people with proximal 18q- share many features with their family members. They will also have their own unique skills and abilities which you will not find in the following list.

Research is critical. As we learn more about proximal 18q-, we will also learn more about how to best treat it. This will improve the health and development of people with proximal 18q-.

Background

Proximal 18q- was first described in 1974. Since then, about two dozen cases have been reported in the literature. This condition may also be called "interstitial 18q-". Because this condition is less common than distal 18q-, the information presented here is based on fewer case reports.

Genetic Basis of Proximal 18q-

The term "proximal 18q-" means that part of the long arm of chromosome 18 is missing, or deleted, from one of the two copies of chromosome 18. For more information about basic genetic concepts, please visit our website at www.chromosome18.org.

Proximal deletions involve bands between the centromere and band 21.1. Proximal deletions usually extend from band 12.1 or 12.2 to 21.1. There have also been some individuals with a deletion that starts at band 11.2 and extends to 21.1. These deletions are usually "interstitial" deletions. This means that the deletion does not include the tip of the chromosome. The diagram below shows which parts of chromosome 18 are involved with these two different types of deletions.

In most individuals, the deletion is the only chromosome change present. However, in some cases, the deletion results from a more complicated chromosome rearrangement.

Characteristics of Proximal 18q-

Development

Proximal 18q- changes the way the brain develops and works.

Infants, toddlers and young children with proximal 18q- may develop more slowly than those without proximal 18q-. For example, it may take a little longer for them to roll over, sit, crawl, and walk. It may also take longer for them to reach for and grab toys, hold a bottle, and to feed themselves. Language skills may also develop later than their peers.

Children and adults with proximal 18q- may have some cognitive disability, though the degree of impairment varies between individuals. It does appear that many individuals with proximal 18q- have more difficulties with expressive speech than with receptive speech. That is, they may be better at understanding others than at expressing themselves through speech.

Again, it is important to remember that every person with proximal 18q- is different. Some may be more severely affected than others. At this time, we cannot predict exactly how proximal 18q- will affect a child's development.

Neurologic Changes

People with proximal 18q- frequently have low muscle tone (hypotonia). About half of people with proximal 18q- have seizures.

If a person has neurological problems, they may see a neurologist. If seizures are suspected, a doctor may request an electroencephalogram (EEG).

MRI Changes

Some people with proximal 18q- have changes in the structure of their brain that can only be detected with an MRI. For example, two people have been identified with a thin corpus callosum. The corpus callosum is the bundle of nerves that connect the right and the left sides of the brain. Other people have been diagnosed with "enlarged lateral ventricles". This simply means that the spaces that contain the cerebrospinal fluid in the brain are larger than expected. Lastly, several individuals evaluated at the Chromosome 18 Clinical Research Center had "Virchow-Robin perivascular spaces". Basically, this means that some extra space was noted surrounding some of the blood vessels in the brain.

Eyes and Vision

Vision problems are fairly common. The eyes may be misaligned (strabismus). Some people with 18q- may have problems focusing their eyes (refractive errors). They may be near-sighted, far-sighted, or have astigmatism.

Ear Infections and Hearing Loss

Babies, toddlers, and children with proximal 18q- may have more ear infections than other children. In turn, this may lead to hearing problems. Therefore, it is important to identify and treat ear infections. Most of the time, medicine is prescribed to treat the ear infection. Some children may require surgery to insert tubes in the ears to reduce the number of ear infections.

Hearing problems are not very common in people with proximal 18q-. There have only been two people with proximal 18q- and hearing loss. Both of them had hearing loss caused by recurrent ear infections which resolved after the placement of ear tubes.

Heart

Heart defects are rare in babies with proximal 18q-. There has been one individual reported with a patent foramen ovale, or a small hole in the wall separating two chambers of the heart.

In order to be sure that a person with proximal 18q- does not have a heart defect, a physician may order an ultrasound of the heart (echocardiogram) to look for defects.

Orthopedic Changes

People with proximal 18q- may have foot abnormalities. A couple of individuals have been diagnosed with clubfoot (talipes equinovarus). Several others have developed flat feet(pes planus). Some may also develop a curvature of the spine (scoliosis). All of these bone problems can affect the way that they walk and may lead to gait abnormalities.

People with foot, knee, or spinal changes may see an orthopedic specialist. Braces and inserts, surgery, and therapy may help in addressing orthopedic concerns.

Genitourinary Changes

Although it is uncommon, boys with proximal 18q- may have some changes in the urogenital system. Two boys reported in the literature had testicles that were not fully descended (cryptorchidism). Another baby with proximal 18q- had a birth defect of the bladder that required surgical correction.

Still, the majority of babies with proximal 18q- do not have any problems involving the genitourinary tract.

Growth

Children and adults may have changes in their growth patterns. Children with proximal 18q- are often small for their age. Unlike individuals with distal 18q-, however, no one with proximal 18q- has been diagnosed with growth hormone deficiency.

Adults with Proximal 18q-

There have been a handful of adults with proximal 18q- reported in the scientific literature. Most of these adults are in the same family and have a larger deletion than others with proximal 18q-. Their deletion started at band 11.2. Two of these adults have passed away from cancer; one had lymphoma and the other had a glioblastoma (brain tumor).

Both of these individuals as well as one more adult in the family had an autopsy after they passed away. The autopsies showed some changes in the brain. These changes are neurodegenerative, meaning that they involved the degradation of some of the brain cells. Unfortunately, we do not know whether or how this relates to the 18q deletion.

Lastly, several adults from different families have been diagnosed with cataracts. Thus, it is important for adults to have routine ophthalmologic evaluations.

Facial Features

People with proximal 18q- may have facial features that are slightly different from other family members. These changes do not affect a child's health or development. They are simply small differences that might be noted by a doctor.

They may have a prominent forehead, and the middle of their face may look flat. Their eyes may be deep-set.

Although people with proximal 18q- may have facial features in common with one another, it is important to remember that they also have features in common with their family members.

Family Planning and Genetic Counseling

Many parents wonder, "If we have another child, what is the chance that our next child will have proximal 18q-?"

The answer to this question depends on whether a chromosome change has been identified in one of the parents. In most cases, neither parent has a chromosome change. In this situation, the chance that a couple will have another child with proximal 18q- is low.

In some families, the deletion of 18q results from a chromosome rearrangement in a parent. In this situation, the likelihood that another child would have a chromosome change depends on what type of rearrangement the parent has and which chromosomes are involved.

If you have questions about the implications of a chromosome change for other family members, we recommend contacting a genetics provider.

For Additional Information

The information provided here is general information based on the literature as well as the experiences in the Chromosome 18 Clinical Research Center. However, every person with 18q- is different. Therefore, this information should not replace professional medical advice, diagnosis, or treatment. If you have questions or concerns, you may find it helpful to talk with a clinical geneticist or genetic counselor. You can locate a genetics provider at one of these sites:

GeneTests Clinic Directory (www.geneclinics.org)

National Society of Genetic Counselors (www.nsgc.org)

Selected References

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If you found this information helpful, or would like to learn more about the Chromosome 18 Registry & Research Society, we encourage you to become a member of our organization.

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With your help, we will achieve our mission :

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