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AARSKOG SYNDROME: A REVIEW OF THE GENETIC DISORDER

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ABTRACT :-

The rare genetic illness known as Aarskog Syndrome, or Aarskog-Scott Syndrome, is typified by a variety of physical, developmental, and occasionally cognitive difficulties. This syndrome, which was initially identified by Dr. Aarskog in 1970 and was further investigated by Dr. Scott, affects both males and females, however because of its X-linked inheritance pattern, it is most frequently observed in males. Despite the condition's relative rarity, improving patient outcomes and providing assistance to impacted families depend on an understanding of its symptoms, causes, and therapy.

Keyword :-

X-linked genetic disorder, physical development, multidisciplinary approach, educational support, offering support to affected families

INTRODUCTION :-

Fasciogenital dysplasia, another name for Aarskog-Scott syndrome (AAS), is an uncommon X-linked condition that has a recessive mode of inheritance (OMIM #305400).Aarskog originally identified the illness in 1970, and Scott went on to characterize it in two distinct families with several males affected [1, 2]. Aarskog-related short-statured people with genital dysmorphisms such cryptorchidism and shawl scrotum, as well as cranial abnormalities like hypertelorism, short noses, and ptosis. In contrast, Scott reported the same traits in three distinct individuals in 1971. The presence of variously associated signs, including clinodactyly, brachydactyly, long philtrum, widow's peak, camptodactyly, interdigital webbing, and inguinal/umbilical hernia, characterized the phenotypes of patients described by a number of other authors in the years that followed.ese supported the identification of a nosologically distinct condition [3, 4].A wide range of neurocognitive deficits and/or behavior problems, from severe intellectual disability to attention deficit and hyperactivity disorder (ADHD), were also described. Nonetheless, the majority of AAS-affected people had average IQs [5–8]. Teebi's 1993 study analyzed and divided the phenotypes of the reported cases into primary, secondary, and additional criteria, claiming that the presence of three or more classical signs could lead to a clinical suspicion of AAS [9]. The study also attempted to organize the set of clinical Hindawi Genetics Research Volume 2021, Article ID 6652957, 9 pages https://doi.org/10.1155/2021/6652957 signs documented in these patients and to outline a clinical filter for the diagnostic hypothesis.. .e responsibility of FGD1 gene variants in the pathogenesis of the X-linked form of AAS (OMIM ∗ 300546) was first described by German [10], based on translocation breakpoint analysis in a family. .is gene maps to the short arm of the X chromosome (Xq11.22) and encodes a guanine nucleotide exchange factor (GEF). .e GEF then activates Cdc42, participating directly in cytoskeletal organisation, growth regulation, and normal embryonic development in all mammals [11–13]. To date, 52 different pathogenic variants in FGD1 have been reported in AAS throughout all genes [14).No distinct phenotype-genotype link has been identified, despite extensive research into a relationship between the variations and the range of clinical manifestation in AAS patients [15].Clinically and genetically, e syndrome is diverse; in addition to FGD1, other genes that have not yet been identified may play a role in the pathophysiology.Cases that have been clinically

identified but lack accompanying documentation may account for the low detection rate. molecular data . We conducted a systematic review of published articles to summarize the manifestations in patients with positive genetic testing (X-linked “bona fide” AAS), evaluating the quality of the available evidence and analyzing the potential genotype-phenotype correlation. It is evident that understanding the most common phenotypes is crucial for managing these patients.

ETIOLOGY AND GENETICS :-

Mutations in the X chromosome’s FGD1 gene are the main cause of Aarskog Syndrome. A protein that is essential for the formation of bone structure, facial features, and other tissues is encoded by this gene. The unique clinical symptoms of the disease are caused by mutations that interfere with regular biological processes. Males with only one X chromosome are more likely to be affected by the disorder since it has an X-linked recessive inheritance pattern. Because they have two X chromosomes, females are typically less afflicted, however they occasionally exhibit milder traits.Mutations in the X chromosome’s FGD1 gene are the main cause of Aarskog Syndrome.

CLINICAL FEATURES :-

The distinctive physical characteristics of Aarskog Syndrome are its defining trait. These consist of a small, round chin, a large mouth with full lips, a short, broad nose, and widely separated eyes (hypertelorism). Low-set ears, a trapezoidal face, and a short neck are other typical facial features. Furthermore, skeletal anomalies include small stature, clinodactyly (curved fingers), and joint hypermobility may be present in people with Aarskog Syndrome.

Different people with Aarskog Syndrome develop intellectually. Some people may have more severe cognitive deficits, while many people only show modest developmental delays. It is important to remember that many people with Aarskog Syndrome have normal IQ, and that the disorder is not defined by intellectual difficulties. Behavioral issues, such as social difficulties and attention deficiencies, are also frequently noted.

Heart problems, hearing loss, and, in certain situations, delayed puberty are other noteworthy characteristics. Even within family members, the intensity of these symptoms might vary greatly from person to person.

DIAGNOSIS :-

The clinical appearance is frequently used to make the diagnosis of Aarskog Syndrome, particularly when distinguishing facial features are present. The diagnosis can be verified by genetic testing, especially for mutations in the FGD1 gene. Implementing early therapies that can assist manage physical and developmental difficulties requires an early diagnosis.

(a) (b)

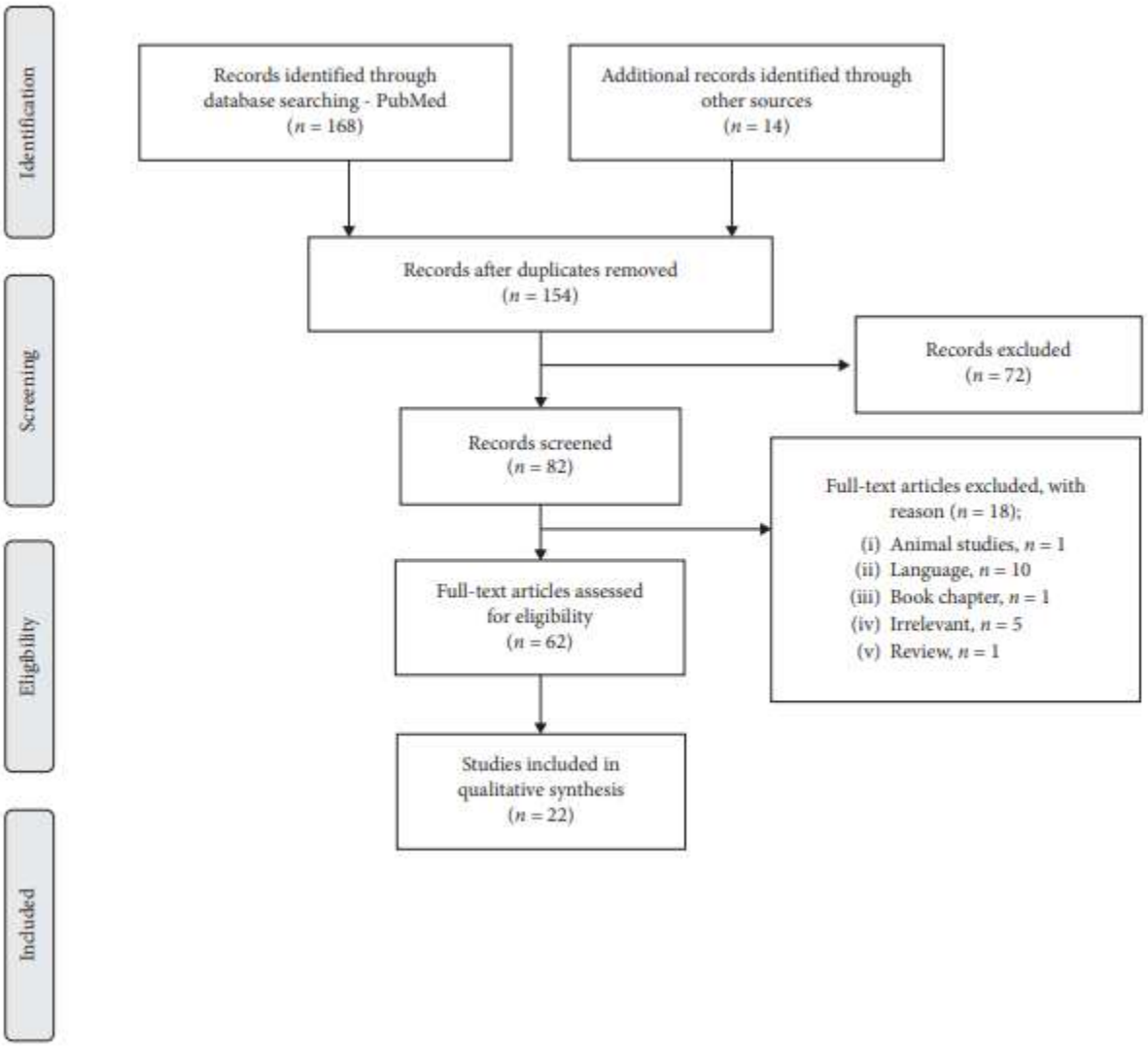
MANAGEMENT AND TREATMENT :-

Aarskog Syndrome does not currently have a cure. Improving quality of life and treating specific symptoms are the main goals of management. Physical therapy may aid with joint flexibility and motor abilities, and early intervention programs can help with developmental delays. While behavioral treatment can help with social and emotional difficulties, special education services can help with cognitive development.

Frequent monitoring by medical professionals is crucial, especially for monitoring growth, treating possible cardiac conditions, and making sure that eyesight and hearing problems are appropriately treated. In certain situations, bone deformities or other physical problems that affect function or appearance may require surgical intervention.

PROGNOSIS :-

People with Aarskog Syndrome have a very different prognosis. Many people may live independent lives with the right care, but those who have physical or learning disabilities could need continuous assistance. More intense care and surveillance may be necessary in severe cases involving several organ systems or a considerable intellectual handicap. Reaching one's full potential can be made possible by early medical intervention, which can greatly improve results.



CONCLUSION :-

The rare genetic condition known as Aarskog Syndrome can present with anything from minor physical characteristics to more serious developmental and cognitive difficulties. Even though there isn't a cure, people affected can have far better lives with early diagnosis and focused therapy. Better treatments and a greater comprehension of how genetic abnormalities affect human development could result from ongoing study into the underlying genetic pathways of Aarskog Syndrome. In order to help impacted families and medical professionals manage this complicated condition, awareness and education are essential.

An outline of Aarskog Syndrome's genetics, clinical characteristics, and treatment approaches is given in this review. It emphasizes how crucial early diagnosis and individualized treatment are to improving results for those who are impacted.

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