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WEAVER SYNDROME-A REVIEW

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Abstract:

Weaver syndrome is commonly caused by mutations in the EZH2 gene. The EZH2 gene provides instructions for producing a histone methyltransferase enzyme. This enzyme plays a role in a chain reaction that affects various muscles, bones, and organs, contributing to the diverse symptoms observed in individuals with Weaver syndrome. Genetic disorders, including Weaver syndrome, result from mutations in genes, disrupting normal cellular functions.

Keywords: weaver syndrome, histone methyl transferases, EZH2, overgrowth, weaver-smith syndrome

Introduction: Weaver syndrome is commonly caused by mutations in the EZH2 gene. The EZH2 gene provides instructions for producing a histone methyltransferase enzyme [(1)]. This enzyme plays a role in a chain reaction that affects various muscles, bones, and organs, contributing to the diverse symptoms observed in individuals with Weaver syndrome. Genetic disorders, including Weaver syndrome, result from mutations in genes, disrupting normal cellular functions [(2)].

FIGURE NO :1 – Tallest women in the world**.**

Epidemiology:

Uncertainty in the incidence of Weaver syndrome is notable, as the causative mutation was identified only in 2011. As of December 2013, 48 confirmed cases have been documented [(3)]. In 2012, the South West Thames Regional Genetic Services at St George's Hospital in London assessed their detection rate among a cohort of patients with childhood overgrowth. This underlines the ongoing efforts to understand and diagnose [(4)] this rare condition.

Weaver syndrome is commonly caused by mutations in the EZH2 gene. The EZH2 gene provides instructions for producing a histone methyltransferase enzyme [(5)]. This enzyme plays a role in a chain reaction that affects various muscles, bones, and organs, contributing to the diverse symptoms observed in individuals with Weaver syndrome [(6)]. Genetic disorders, including Weaver syndrome, result from mutations in genes, disrupting normal cellular functions [(7)].

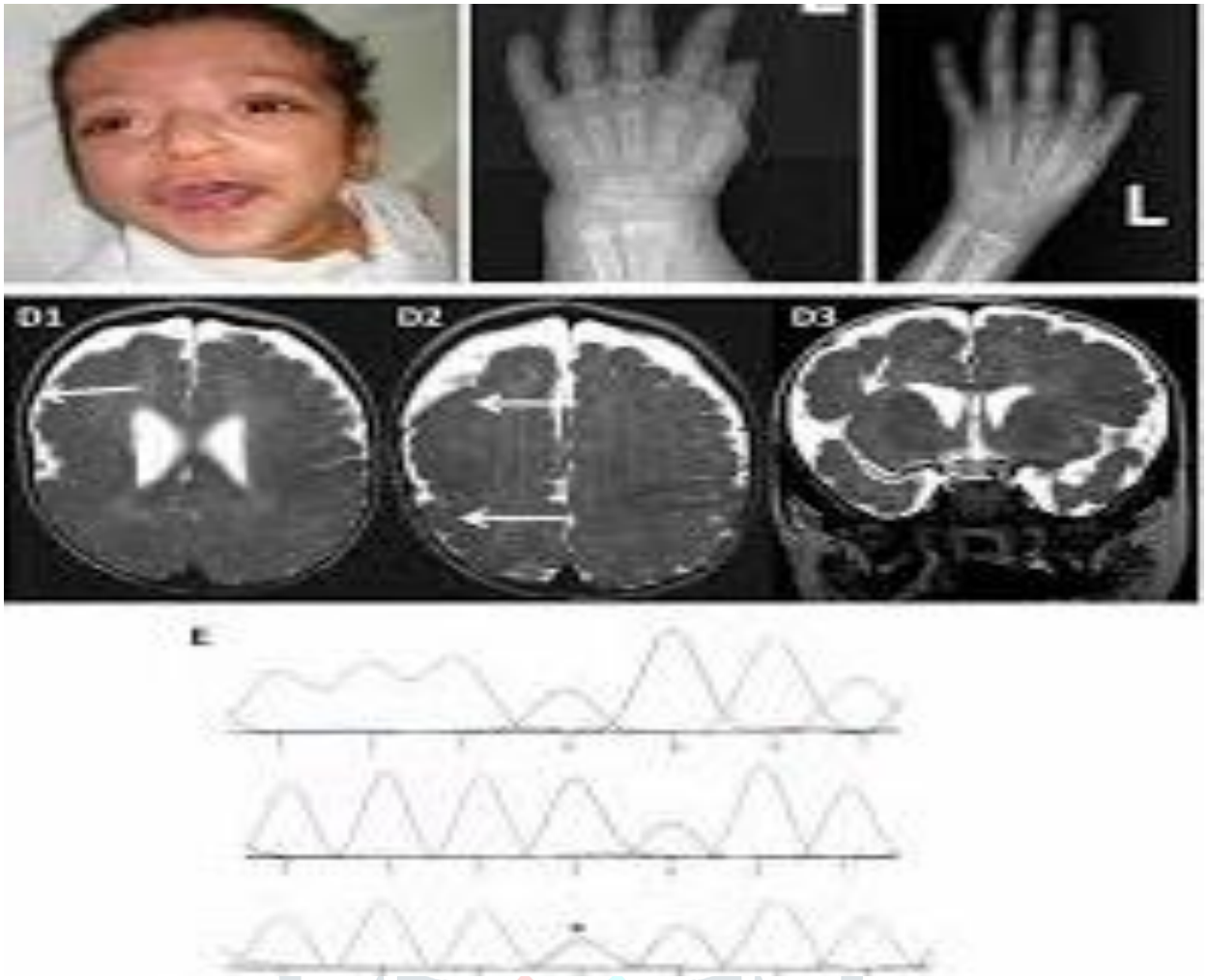

FIGURE NO:2- DEFECTIVE CORTICAL DEVELOPMENT

Symptoms:

- Weaver syndrome in a newborn may include a longer body length,
- higher birth weight,
- broad forehead,
- large head[8],
- large or low-set ears,
- small lower jaw,
- congenital heart conditions,
- eyes that are far apart,
- longer groove between the upper lip and nose,
- joint deformities in the toes[9],
- intellectual disabilities,
- loose muscles in the abdomen.
- If you observe these characteristics, seek medical evaluation for a proper diagnosis and guidance[10].

Diagnosis:

Weaver syndrome and Sotos syndrome share significant phenotypic similarities, leading to frequent misidentification[11]. Both syndromes exhibit overgrowth in early development, advanced bone age, developmental

delay, and prominent macrocephaly. Confounding the diagnosis, mutations in the NSD1 gene can contribute to both syndromes,[12] further complicating differentiation.

Distinguishing features of Weaver syndrome from Sotos syndrome encompass a broad forehead and face[13], ocular hypertelorism, a prominent wide philtrum, micrognathia, deep-set nails, retrognathia with a prominent chin crease, increased prenatal growth, and a notable discrepancy in carpal bone age compared to metacarpal and phalangeal bone age[14]. These distinctions aid in the differential diagnosis between the two syndromes.

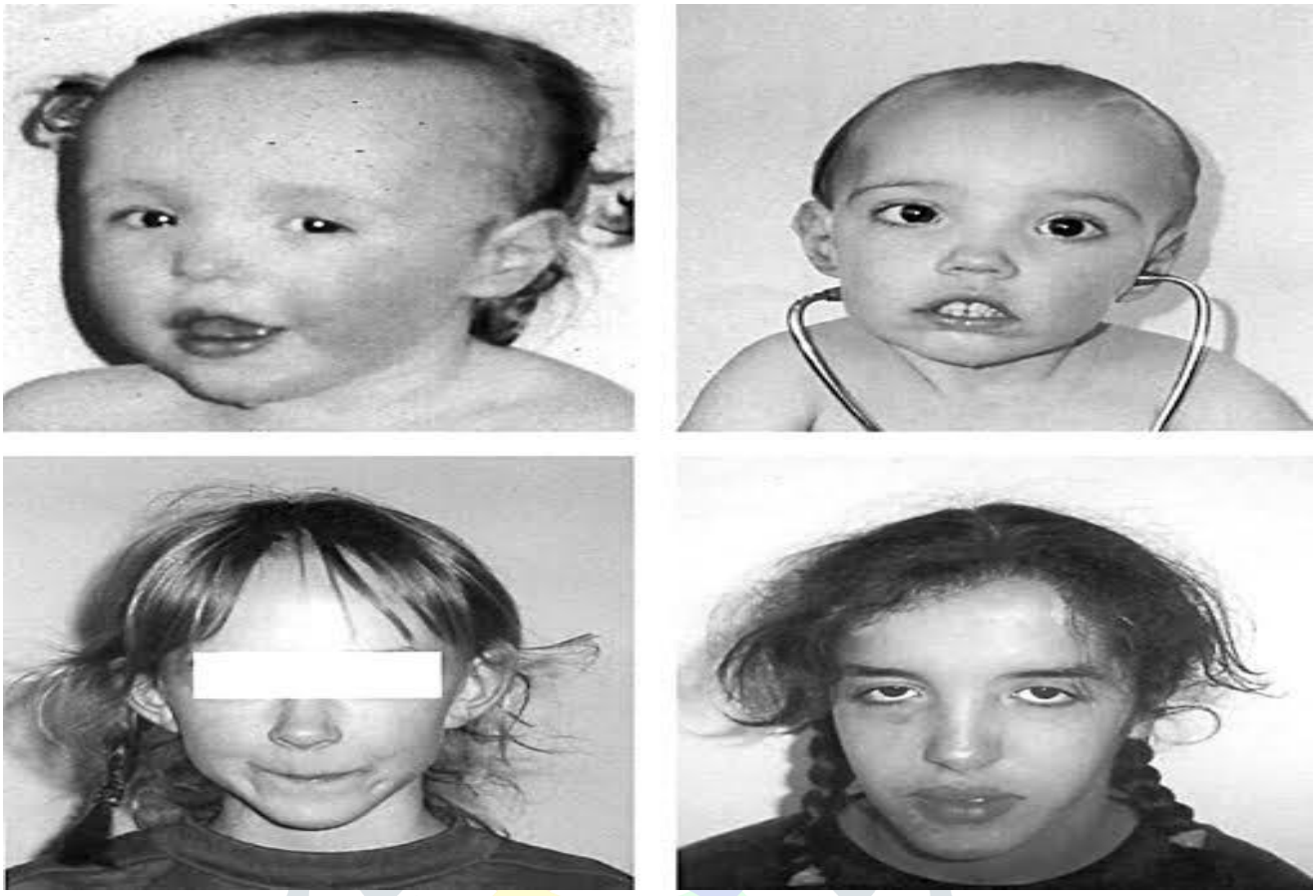

FIGURE NO :3- CHILD WITH WEAVER SYNDROME.

Prevention:

Indeed, there is currently no known way to prevent Weaver syndrome. Despite the possibility of inheriting the syndrome from a parent [15], it can also manifest without a family history. It's notable that individuals may unknowingly carry the gene mutation without displaying symptoms of Weaver syndrome [16]. Regular genetic testing and counselling may be considered for those with a family history or suspected carrier status.

TREATEMENT:

It's crucial to tailor the treatment for Weaver syndrome to address specific symptoms. Physical therapy can aid with rigid muscles and foot differences [17], while surgery may be necessary for correcting finger, toe, or foot issues. Individualized education plans and therapies can be beneficial for affected children. Always consult with healthcare professionals for personalized advice [18].

surgery can address skeletal issues, while physical and occupational therapy play crucial roles in improving muscle tone [19]. Speech therapy is also valuable for addressing any speech-related problems, creating a comprehensive approach to holistic care.

genetic testing can be crucial in confirming clinical diagnoses, especially in cases like Weaver syndrome where growth changes are broad and could be attributed to various overgrowth syndromes [20]. By analysing the EZH2 gene, genetic testing can identify specific harmful changes, confirming the presence of Weaver syndrome. This is particularly valuable given the nonspecific symptoms of Weaver syndrome, allowing for a more accurate and targeted diagnosis among the various genetic causes of overgrowth syndromes [21].

The description of the Weaver syndrome proband in this study includes various observations:

A. Proband 5 exhibits features at 2, 4, 6, 8, and 19 months [22].
B. Both hands show prominent palmar creases at 12 months.
C. At 27 months, the face displays prominent rosy cheeks, profile, and ears, with confirmation of a dimple behind the right ear [23].
D. At 31 months, mild camptodactyly is observed on the toes, and a third nipple is apparent.
E. Full torso and full body are also shown at 31 months [24].
F. X-rays of the hands at 11 1/2 months and the knee at 10 1/2 months indicate advanced bone age.
G. MRI done at 5 days of age illustrates asymmetric perisylvian polymicrogyria [25].

It's important to note that, as of now, there is no cure for Weaver syndrome.

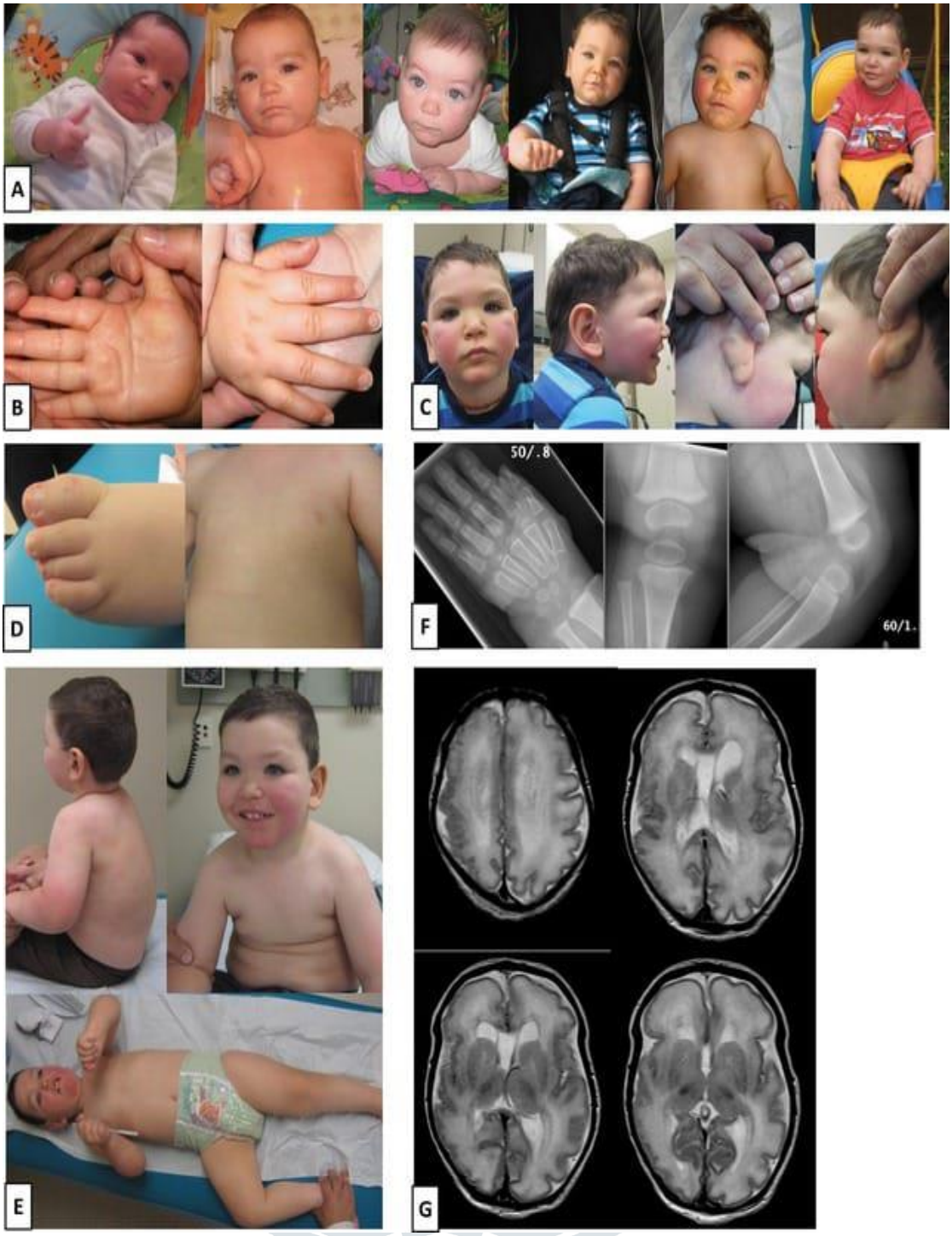

FIGURE NO:4- EZH2 PROTIEN VARIENTS

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