Klippel-Trenaunay-Weber syndrome with partial motor seizures and hemimegalencephaly

Shakeel Ahmed, *MRCPCH, FCPS,* ***Roshan Koul,*** *DM, FRCPCH,* ***Ahmed Wailey,*** *MD,* ***Dilip Sankhala,*** *MD.*

ABSTRACT

تم تسجيل حالة طفلة تعاني من متلازمة كليبيل ترينوي ويبر مع نوبات الصرع الجزئية الحركية، إضافة إلى إصابتها بتضخم نصفي في الدماغ.

A girl with Klippel-Trenaunay-Weber syndrome with partial motor seizures is reported. She had hemimegalencephaly and band heterotopia on MRI of the brain.

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From the Departments of Child Health (Ahmed, Koul), Dermatology (Wailey), and Radiology (Sankhala), Sultan Qaboos University Hospital, Muscat, Sultanate of Oman.

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Address correspondence and reprint request to: Dr. Roshan Koul, Senior Consultant, Department of Child Health, Sultan Qaboos University Hospital, PO Box 38, Muscat 123, Sultanate of Oman. E-mail: koul@squ.edu.om

Klippel-Trenaunay-Weber syndrome (KTWS) is a rare neurocutaneous syndrome. The syndrome was first described by Klippel and Trenaunay in 1900[1] in 2 patients who presented with a combination of port wine stain and varicosities of an extremity, with hypertrophy of the soft tissue and bony extremities of the affected limb. Only a few cases of KTWS have been reported in the literature. Not many cases have been in association with seizures, and few in association with hemimegalencephaly (HME). There are no reports of an association of KTWS with seizures and HME. In this study, we are reporting a 13-year-old girl with KTWS associated with partial motor seizures and HME with band heterotopia on radiological examination, in order to highlight this rare syndrome.

Case Report. A 13-year-old girl presented at the age of 7 years with right hemi hypertrophy and hemangioma of the chest and right lower limb, which gradually increased in size. She developed left sided focal motor seizures at the age of 6 years, controlled by an oral anticonvulsant (carbamazepine). She was fit free for 3 years, and when tapering of medication was started, seizures recurred and hence she was continued on the medication. She was the elder girl of non-consanguineous parents with another younger sibling boy with no medical concerns. She was born normally after full term pregnancy with no perinatal problems. Her development was normal. On examination she had weight and height at the 50th centile, and the head circumference was at the 75th centile. There was obvious right-sided hypertrophy of the face, tongue, upper, and lower limb. The right upper and lower limbs were approximately 10 cms thicker than the normal left side (photo not permitted). She had capillary hemangioma involving the neck, chest, and leg. Other systems, including the cardio vascular system did not reveal any significant abnormality. There was no neurological deficit. An EEG revealed multifocal spikes with secondary generalization. A CT of the brain showed some asymmetry of the 2 brain hemispheres and hemi cranium. An MRI revealed generalized thickening of the cortex of the right temporal and temporo-parietal gyri, with paucity of white matter. Associated band heterotopia was shown with focal gliosis of peri ventricular white matter (**Figure 1**). The gyri in the involved regions were thickened with enlargement/hypertrophy of the parenchyma. No abnormal enhancement, obvious calcification, or encephalomalacia was seen. There was no ventriculomegaly, and the posterior fossa was normal.

Discussion. Klippel-Trenaunay-Weber syndrome is a nonhereditary neurocutaneous disorder characterized by unilateral vascular nevi, soft tissue or long bone hypertrophy, or both, and venous varicosities.[2] The cutaneous vascular nevi may be present in any part of the body and in various sizes; hemicorporal involvement is a common finding. The neurological features include seizures and mental retardation. Macrocephaly is common, HME is less common.[3] Hemimegalencephaly with polymicrogyria ipsilateral to the hemicorporal hypertrophy and the vascular lesion, including the face has been previously reported.[2] Our patient had an association of seizures and HME. Hemimegalencephaly is a major, but rare congenital malformation of the brain. No normal stage of human brain development is characterized by such hemispheric asymmetry.[4] In normal human brain development, though there is some asymmetry in function

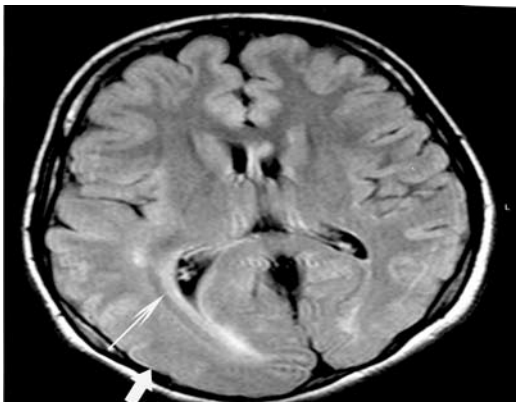

Figure 1 - Magnetic resonance imaging transverse FLAIR image at the level of the lateral ventricles shows hemimegalencephaly on the right side with mild pachygric posterior temporal and occipital cortex (thick arrow) and periventricular band heterotopia (thin arrow).

acquiring, such as speech on the left side, and visuospatial on the right side, however, at no stage is it characterized by hemispheric asymmetry. Hemimegalencephaly is also not due to insults to the brain such as vascular causes or inheritance pattern. It does not follow a Mendelian pattern of inheritance and usually occurs sporadically. It is often an isolated disorder, but may be associated with several neurocutaneous syndromes, one of them being KTWS.

Hemimegalencephaly affects all ethnic groups and both genders equally. It is not secondary to a preceding acquired lesion, either vascular, infectious, metabolic, or neurodegenerative. It has been suggested that it results from some type of acquired unilateral hemispheric insult in the mid to late second trimester of gestation.[5] It appears more a genetically programmed developmental disorder occurring at an earlier stage of neuroblast migration.[6] However, the association of our case with heterotopia suggests that this disorder could be a neuronal migration disorder. Epilepsy is often associated with this disorder. The EEG is abnormal in all cases of HME, isolated or syndromic, reflecting the structural abnormality of the affected hemisphere. In the neonatal period, suppression burst pattern, followed by hypsarrhythmia and later, focal seizure activity may be seen. Three types of EEG abnormalities have been described, triphasic complexes with large amplitude, asymmetric suppression burst pattern, and asymmetric alpha like activity with high amplitude.[7] An MRI is the investigation of choice, though plain skull films, ultrasound and CT will show the abnormalities. Increased size and altered shape of the ventricle is usual.[5] The cortex is broader than normal, and neuroblast migratory anomalies are frequently associated with HME, the most common being heterotopias.[5,8] Prenatal diagnosis may be suspected on the basis of MRI.[9] The imaging features have been classified into 3 grades, depending on the severity.[10] Magnetic resonance spectroscopy has revealed metabolic disturbances with marked reduction of glutamate and N-acetylaspartate in the white matter.[11] Single photon emission computed tomography and positron emission tomography have also shown changes in patients with HME.[12,13] The prognosis of KTWS depends upon the associated seizures and the physical deformities. The seizures are usually partial and refractory to the treatment. The physical abnormalities need orthopedic and dermatologic (cosmetic) intervention. Since the disease does not follow a Mendelian pattern of inheritance, chances of recurrence are rare and there is usually no family history of other affected individuals.

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