PalStudent Journal
A Palestinian Scientific Journal for the Youth

AL-QUDS UNIVERSITY

ABSTRACTS: VOLUME 8, SPECIAL ISSUE {8th Undergraduate Conference}

GENOTYPE-PHENOTYPE CORRELATION AND THE SEVERITY OF NEUROLOGICAL MANIFESTATIONS IN PALESTINIAN PATIENTS WITH HYPERORNITHINEMIA HYPERAMMONEMIA HOMOCITRULLINURIA (HHH) SYNDROME: CASE SERIES WITH REVIEW OF PREVIOUSLY REPORTED PALESTINIAN PATIENTS

Tolin Qtefan[1], Sulaf Daraghmeh[1], Mohammad Khalifeh[1], Mohammad Sawalmeh[1], Ahmad Itawy[1], Imad Dweikat[1]
Supervisor: Sulaf Daraghmeh[1]

[1] Arab American University, Ramallah, Palestine

Abstract: Hyperornithinemia–hyperammonemia–homocitrullinuria (HHH) syndrome (OMIM 238970) is a rare autosomal recessive urea cycle disorder caused by SLC25A15 gene mutations, leading to defective mitochondrial ornithine transporter. Clinical presentations include vomiting, encephalopathy, coma, developmental delay, intellectual disability, seizures, ataxia, pyramidal signs, and hepatitis-like attacks/coagulopathies. Diagnosis relies primarily on genetic testing, then on the biochemical triad of hyperammonemia, hyperornithinemia, and homocitrullinuria, which may be subtle or absent. This is a Case series of newly reported Palestinian patients and a review with comparison to previously reported ones. Clinical data were collected through structured interviews with patients, focusing on medical history, disease progression, performing a neurological examination, and laboratory and genetic testing from medical records, as it showed founder mutations, although patients belong to different Palestinian families. This research focused on pediatric patients to assess the importance of the early diagnosis, early management, and liver transplantation on neurological outcomes and their reversibility. Additionally, correcting metabolic status to enhance quality of life. This study focuses on the progression of neurological impairment, with particular focus on pyramidal tract signs, motor dysfunction, and speech delay. These results will help to give a better understanding of the correlation between the genotype and phenotype of the Palestinian patients as their associations are not fully deterministic due to the factors that affect outcomes beyond the primary condition. Finally, we reported new Palestinian cases despite the rarity of the disease. So, this will enrich the data about Palestinian patients and enhance the quality of knowledge, so practitioners can deal with such cases

Key Words: Hyperornithinemia–hyperammonemia–homocitrullinuria (HHH) syndrome, urea cycle disorder, **SLC25A15 mutation, mitochondrial ornithine transporter 1 (ORNT1), autosomal recessive inheritance, hyperammonemia. Hyperornithinemia, homocitrullinuria, ornithine transport defect, carbamoyl phosphate accumulation, orotic aciduria, metabolic triad, neurological impairment, liver transplantation.

Correspondence concerning this article should be addressed to the mentioned authors at the mentioned institutes.

E-mail: research@admin.alquds.edu
Palestine, Abu Dis, Al-Quds University