

ASSESSMENT OF HEARING AND ITS RELATIONSHIP WITH DIABETES AND HYPERLIPIDEMIA PATIENTS IN SAMARRA CITY

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ABSTRACT : This study aims to assess the hearing in patients with diabetes mellitus and hyperlipidemia. It includes 100 samples, which are distributed to four equal groups. The first group is control group (c), the second group is a diabetic patient (G1), third group is hyperlipidemia patient (G2) and fourth group is patient with diabetes mellitus and hyperlipidemia (G3). Glucose and lipid levels calculated according to the enzymatic method. The hearing threshold is measuring by pure tone audiometry (PTA) after examination of ear canals and tympanic membranes and after we did tympanometry to exclude patients with conductive hearing loss. The results revealed that there is an increase in the levels of glucose in G1 and G3 groups compared to C and G2 groups, increasing of hearing impairment in the three deceased groups of compared to the healthy group. The result showed increasing in levels of blood lipid profile (except HDL) in hyperlipidemia group and group of diabetes and hyperlipidemia compared to the healthy group. Conclude from the study that hearing loss is more prevalent in patients with diabetes mellitus and hyperlipidemia compared to patients with diabetes mellitus or hyperlipidemia. Alone high blood lipids may lead to blood vessel dysfunction, injury or hearing loss. Hearing loss at different frequencies (low, medium and high) was observed in people with diabetes.

Key words : Hearing loss, audiometry, diabetes mellitus, hyperlipidemia.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder characterized by high serum glucose accompanied with carbohydrate, protein and lipid metabolism (Teshome *et al*, 2018). This disease considered as one of the most challenging disease in twenty first century across worldwide. In 2015, 415 millions of diabetes cases was recorded specially in adult persons with 8.8% of population. Researches revealed that 625 million persons will be diabetes persons (10.4% of population) in 2040. (Alramadan *et al*, 2018).

Diabetes mellitus considered as a widely distributed and progressive disease. It represent as asource of big problem for general health all around the world (Chandhury *et al*, 2017).

DM considered as the most common disease than type I diabetes. It represent 90% of all cases of diabetes (Beckett *et al*, 2015). Persons, who suffer from this type of diabetes are liable to the high risk of micro blood vessels complication such as retinopathy, nephropathy, neuropathy and micro blood vessels compilations such as heart. One of its complicationis arterial hypertension, hypercholesterolemia and serum hyperlipidemia (Santo-

Longhurst and Krucikg, 2014; Defronzo *et al*, 2015). Helzner and Contrera (2016) pointed that patent with diabetes mellitus areliable for hearing loss.

Fleischer *et al* (2016) pointed that DM is ametabolic disease leads to blood vessels and nerves dystrophy in most patients. As the hearing, process depends on the state of blood vessels and small nerves. Which may be effected by hyperglycemia (Bainbridge *et al*, 2008). The relation between DM and sensorineural hearing loss (SNHL) was studied several times and they found that it may lead to SNHL (Lisowska *et al*, 2001). In type 2 diabetes mellitus, there is changes in the cochlea like atrophy in the blood vessels and loss in the outer hair cells in the basal turn of the cochlea, which may be cause of hearing loss.

Thickening in the wall basal membrane blood vessels in diabetic patients, also observed researches revealed that hearing loss in DM patients may result from crest micro vessels disorder and blood vessels degeneration and cochlea loss (Fukushima *et al*, 2006). Many studies confirmed the relation between diabetes and hearing loss (Dalton *et al*, 1998; Bainbridge *et al*, 2008). Regarding hyperlipidemia, it is characterized by elevation of one or