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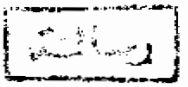
ELECTRONYSTAGMOGRAPHY AND DYNAMIC POSTUROGRAPHY IN NON-INSULIN DEPENDENT DIABETES MELLITUS

Thesis submitted in the partial fulfillment for the master degree in audiology



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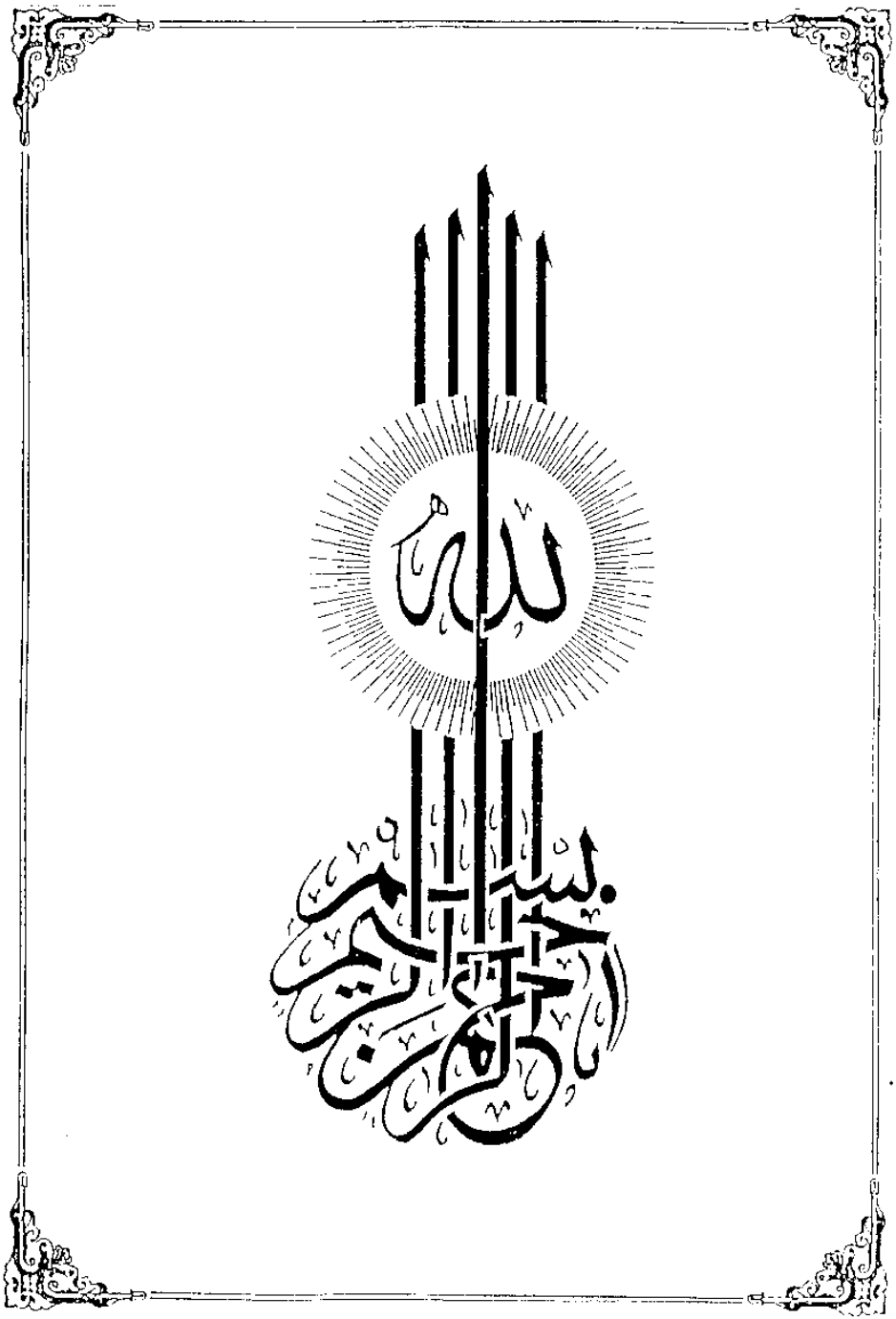

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INTRODUCTION AND RATIONALE

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Body equilibrium is controlled by a complicated interacting mechanism including ocular, proprioceptive, and vestibular systems. Perception of position in space depends on the cerebral integration of received impulses from these three systems. Gradual or sudden impairment in the function of the systems can cause vertiginous symptoms (Hytonen et al. 1989).

Diabetes Mellitus (D.M) is a heterogenous primary disorder of carbohydrate metabolism that affects at least 5 % of population in the developing countries (Ghalioungi and Gharieb, 1987). It is of multiple etiologic factors that generally involve absolute or relative insulin defeciency, insulin resistance, or both. All causes of D.M lead to hyperglycemia which is the hall mark of this syndrome. D.M. is classified into: a) Primary D.M which is of two types: insulin dependent D.M (IDDM or Type I), and non insulin dependent D.M (NIDDM or Type II). This latter is further subdivided into non-obese, obese and maturity onset diabetes of the young. b) Secondary D.M which may result from pancreatic diseases, hormonal abnormalities, drug or chemically induced, genetic syndromes or others (Olefsky, 1988).

Zelenka and Kozak (1965), suggested that D.M. affects the inner ear early in its coarse even before the disease becomes manifested clinically. Updegraff (1979), reported that the most common cause of vertigo was impaired carbohydrate and insulin metabolism. He stated that any patient presenting with vertigo should be suspected as either an occult or manifest diabetic until ruled out by laboratory studies.

In neuro-otologic diagnosis the standard bithermal caloric test has been a corner stone for decades. It tests the

vestibulo-ocular reflexes only. Thus many patients complaining of vertigo, as a symptom, show no pathology in caloric testing. Recent development of posturographic techniques taking into account the vestibulo-spinal reflexes have emphasized the multisensory organization of balance by analyzing some aspects of sensory interaction that includes the vestibular, visual and proprioceptive sensory inputs (Norre, 1994).

Few studies have paid attention to electronystagmographic findings in abnormal insulin levels (Proctor, 1981). To the last knowledge of the authors, no studies were done to study causes of vertigo in D.M. by evaluating both the vestibulo-ocular and vestibulo-spinal pathways. Type II D.M. patients were chosen to exclude iatrogenic causes of vertigo which happens to occur among Type I D.M. patients as a result of insulin overdose (Schwandt and Richter, 1980). Accordingly, this work was designed to study electronystagmographic and posturographic findings in Type II D.M. trying to provide an approach for remedation and rehabilitation of these diabetic patients.

OBJECTIVES

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1- to study the prevalence of abnormalities in Electronystagmography test in Type II D.M., if any.

2- to study the prevalence of Computerized Dynamic Posturography test abnormalities in Type II D.M., if any.

3- to compare Electronystagmography test results with those of Computerized Dynamic Posturography in such patients.

REVIEW OF LITERATURE