Introduction

Sudden death is one of the major problems confusing the medical staffs , as it occurs so suddenly without any warning or predictive data in the majority of cases (**Lown 1979**) .

Sudden death is one of the most serious complications of diabetes mellitus (D.M) and studies investigating sudden death in diabetic patients have recorded that it is much more increased in diabetics with autonomic neuropathy than in those patients without autonomic neuropathy . The importance of autonomic dysfunction in affecting the mortality rates and causing sudden death in diabetes mellitus D.M was reported by the results of large prospective studies in this group of patients (**Pont et al , 1978**) .

The mortality was more than d ouble when heart rate at hospital admission was > 90 beats / min . In the absence of signs of heart failure in patient with coronary artery disease , mean heart rate at rest has been considered as a factor for identification of patients at higher risk of mortality (**Schwartz & Stramba - Badiale , 1996**) . So , it has been reported that analysis of heart rate variability can identify patients at risk of sudden cardiac death after myocardial infarction provided that normal other risk factors , including clinical assessment , other ambulatory electrocardiograph

variables , signal averaged electrocardiograph and left ventricular ejection fraction (**Fei et al , 1995**) .

The most common cause of disability and death among subjects with non - insulin dependent diabetes mellitus (NIDDM) is macrovascular diseases . The reasons and mechanisms of the macrovascular disease in subjects with NIDDM are insufficiently known . There is evidence that insulin resistance and high insulin concentration play an important role , as insulin resistance is associated with high triglyceride and low HDL cholesterol . In addition to its lipid effects , insulin may have an effect on the thickness and structure of the arterial wall (**Saloma et al , 1995**) .

Heart rate variability offers information about sympathetic and parasympathetic autonomic function and thus can serve as a measure of risk factor for cardiac arrhythmia and sudden cardiac death . Heart rate variability appears to be altered in patients with acute myocardial infarction or diabetic neuropathy (**Futterman & Lemberg 1994**) .

Moreover , the analysis of heart rate variability reflects the autonomic regulation of the heart (**Boven et al , 1995**) . Impairment of heart rate variability early after myocardial infarction can be normalized by time but remains low in patients with a compromised left ventricular function (**Malliani et al , 1991**) .

Kleiger et al (1990) have proved that low heart rate variability is the strongest ECG predictor for late sudden death in myocardial infarction in patients with autonomic dysfunction independent of their ventricular functions and frequency of premature contractions . Furthermore , they have proved that heart rate variability of 100 msec .was accurate in predicting the mortality rate and sudden death for patients after myocardial infarction . The above results have shown that heart rate variability of less than 100 msec . is an accurate objective ECG marker for autonomic dysfunction and a sensitive index for prediction of late mortality and sudden cardiac death in patients with autonomic neuropathy .