INTRODUCTION
Type 2 diabetes mellitus is a pre-disposing factor for advanced and severe Coronary Artery Disease (CAD) (1). Coronary Artery Disease is the leading cause for an untimely death in diabetic patients, both in type 1 or type 2 diabetes (2-5). It accounts for as much as about 80% deaths in people with type 2 diabetes mellitus (1). The prevalence of CAD in diabetes is not only high, but it is characterized by severe disease. The prevalence of CAD in the diabetic population ranges from 9.5% -55% (6, 7) whereas in the general population it is reported to be 1.6% to 4.1% (8, 9).

The development of CAD in type 2 diabetes mellitus is multi factorial and well-known risk factors account for only about 25% of the disease (10). Despite being treated for conventional risk factors, subjects with type 2 diabetes mellitus still remain at a substantial residual risk for coronary artery disease when compared to non-diabetics (2, 3). The macrovascular complications are the major long-term complications in type 2 diabetes mellitus.

In type 2 diabetes mellitus the coronary artery disease commences much earlier and the involved vessels show severe disease. The coronary artery disease in diabetic patients is characterized by severe, multi vessel, long segment and extensive disease. The diabetes being a heterogeneous disease (11), it has been observed that not all the patients are at equal risk for developing macrovascular complications. The risk of progression to severe CAD remains unpredictable. The extent and severity of coronary artery disease varies among patients with type 2 diabetes mellitus.

Earlier, Reaven had proposed that the development of insulin resistance (IR) is known to be a crucial step in the pathogenesis and development of diabetes mellitus which leads to metabolic syndrome, and the CAD complications could be predicted by measurement of insulin resistance (12). Subsequently, majority of longitudinal studies were carried out which focused on the development and pathogenesis of CAD, without referring to the severity of the disease. Since this did not have any clinical significance relevance, interest in insulin resistance faded away from the beginning of 21st century.

Long term outcome not only depends on association but also depends on the severity of the disease. It is the severe disease that entirely alters the cardiovascular outcomes in type 2 diabetes mellitus.
Introduction

The severity of the disease is said to be a prognostic factor for patients with CAD which has been proven in several long term clinical studies (13). In a computer model evaluation, it has been shown that patients with severe disease derive significant benefit from aggressive treatment whereas those with lower risk levels had net negative effect on their Quality Adjusted Life Years suggesting overall harm in low risk patients (14).

A large number of analytical scores such as Gensini, SYNTAX, Extent and Vessel scores have been developed to quantify the severity of the coronary atherosclerosis. However, regardless of the degree of discrepancy exist among these scoring systems, they have shown to be consistent and correlate well with each other (13). The measured CAD burden would remain the same despite of increasing complexity in the scoring system (13).

As of now insulin resistance is known to be associated with pathogenesis of CAD that can predict the incidence of coronary artery disease (12), but grading of severity or assessment of severity of coronary artery disease based on insulin resistance has not been studied in detail. The evolution of insulin resistance is said to be unique in type 2 diabetes mellitus. Insulin resistance develops much before the onset of type 2 diabetes and remains relatively constant during the entire disease process, starting from the time of diagnosis (15), even after the conventional treatment for type 2 diabetes mellitus (16, 17).

Since insulin resistance remains relatively stable in type 2 diabetes mellitus, if we establish a significant correlation between insulin resistance and severity of CAD, it will help us in identifying high risk individuals from the beginning itself. We might be able to predict severity by measurement of insulin resistance.

The present study was designed to look for correlation between insulin resistance measured by HOMA-IR and severity of angiographically demonstrated coronary artery disease in patients with type 2 diabetes mellitus. The study looked at the possibility of insulin resistance being a marker for severe coronary artery disease in type 2 diabetes, to select patients who would benefit with aggressive treatment. Subsequently, these patients were followed up for one year after coronary angiogram to find out the factors associated with major adverse cardiac events (MACE).