Analysis of Coronary Artery Disease by using Cox Regression Technique

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Objectives: Coronary artery disease is the narrowing of the artery atherosclerotic heart arteries that supply blood. The basic aim of this study was to discover the important risk factors that cause coronary artery disease and to quantify the degree of the problem of the disease in Peshawar by using the Cox regression technique of survival analysis.

Materials and methods: The data were collected from the patients presenting to the catheterization laboratory of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan for coronary angiography. The sampling procedure used was convenient sampling. With the help of a concise history and laboratory investigations, data of 215 patients were collected, which include the name, age, gender, smoking history, presence or absence of diabetes mellitus, family history, hypertension and hypercholesterolemia. Cox Regression was fitted to the data by considering survival time as a response variable and age, gender, diabetes, hypertension, hypercholesterolemia, smoking, family history, number of vessels involved, left main stem disease, total occlusions and number of lesions as explanatory variables, whereas death is considered as an event.

Results: Cox regression results reveal that hypercholesterolemia, left main stem disease, total occlusion, and joint effects of diabetes mellitus and smoking are the significant risk factors. It was also found that the survival of the male is associated with their cholesterol level, number of vessels blocked and interaction effects of hypertension and smoking.

Conclusions: The results of this analysis show that males have very high odds of an event occurrence in hypercholesterolemia, hypertension and smoking. On the other hand, females are more at risk if they are diabetic, hypertensive or if they are aged. The main findings of this study are that cholesterol level, diabetes and smoking are the important risk factors that cause coronary artery disease.