WAVEFORM ANALYSIS OF PHOTO PLETHYSMOGRAPH DETECTED FROM THE FINGERTIP

The aim of this project was to study the PPG(Photo Plethysmograph) and to find its dependence on age. The variations of PPG in alcoholic subjects, smokers and those with diabetes were also studied. The PPGs of subjects of different age groups were collected and analysed for this purpose. The peripheral pulse has a steep rise and a notch on the falling slope in the younger subjects. With older subjects, a more gradual rise and fall and no pronounced dicrotic notch were observed. The analyzing program calculated ratios t2/t1, P2/P1 and V/P1. As a result, the ratios t2/t1 and V/P1 were significantly different between the younger and older samples. Out of the three ratios, two of them could provide a simple, non invasive means for studying changes in the elastic properties of the vascular system, depending on the age and disease. P2/P1 was not found to vary much with age. Smoking causes changes in the haemodynamic function, distensibility and compliance of large arteries. In habitual smokers, blood pressure is more and so is the heart rate. So there is an increase in distensibility. Increased arterial stiffness might play an important role in atherosclerotic disease and occurrence of acute coronary events. Chronic alcohol ingestion impairs multiple critical cellular functions in the lung. These cellular impairments lead to increased susceptibility to serious complications from lung disease. Alcoholics have a higher risk of developing acute respiratory distress syndrome (ARDS) and experience higher rates of mortality from ARDS when compared to non-alcoholics. Prolonged alcohol consumption can cause damages to the central nervous system. A contour analysis of PPG pulse with diminished dicrotic notch caused uncertainty measurement. Therefore, area under curve of PPG (auc-PPG) was used to overcome this problem.