Correlation of Hyperlipidemia with Platelet Parameters in Blood Donors

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Abstract : Introduction: Blood components are an unexplored area prone to numerous discoveries which influence patient's care. Experiments at different levels will further change the present concept of blood banking. Hyperlipidemia is a condition of elevated plasma level of low-density lipoprotein (LDL) as well as decreased plasma level of high-density lipoprotein (HDL). Studies show that platelets play a vital role in the progression of atherosclerosis and thrombosis, a major cause of death worldwide. They are activated by many triggers like elevated LDL in the blood resulting in aggregation and formation of plaques. Hyperlipidemic platelets are frequently transfused to patients with various disorders. Screening the random donor platelets for hyperlipidemia and correlating the condition with other donor criteria such as lipid rich diet, oral contraceptive pills intake, weight, alcohol intake, smoking, sedentary lifestyle, family history of heart diseases will lead to further deciding the exclusion criteria for donor selection. This will help in making the patients safe as well as the donor deferral criteria more stringent to improve the quality of blood supply. Technical evaluation and assessment will enable blood bankers to supply safe blood and improve the guidelines for blood safety. Thus, we try to study the correlation between hyperlipidemic platelets with platelets parameters, weight, and specific history of the donors. Methodology: This case control study included 100 blood samples of Blood donors, out of 100 only 30 samples were found to be hyperlipidemic and were included as cases, while rest were taken as controls. Lipid Profile were measured by fully automated analyzer (TRIGL:triglycerides),(LDL-C:LDL –Cholesterol plus 2nd generation),CHOL 2: Cholesterol Gen 2), HDL C 3: HDL-Cholesterol plus 3rdgeneration)-(Cobas C311-Roche Diagnostic).And Platelets parameters were analyzed by the Sysmex KX21 automated hematology analyzer. Results: A significant correlation was found amongst hyperlipidemic level in single time donor. In which 80% donors have history of heart disease, 66.66% donors have sedentary life style, 83.3% donors were smokers, 50% donors were alcoholic, and 63.33% donors had taken lipid rich diet. Active physical activity was found amongst 40% donors. We divided donors sample in two groups based on their body weight. In group 1, hyperlipidemic samples: Platelet Parameters were 75% in normal 25% abnormal in >70Kg weight while in 50-70Kg weight 90% were normal 10% were abnormal. In-group 2, Non Hyperlipidemic samples: platelet Parameters were 95% normal and 5% abnormal in >70Kg weight, while in 50-70Kg Weight, 66.66% normal and 33.33% abnormal. Conclusion: The findings indicate that Hyperlipidemic status of donors may affect the platelet parameters and can be distinguished on history by their weight, Smoking, Alcoholic intake, Sedentary lifestyle, Active physical activity, Lipid rich diet, Oral contraceptive pills intake, and Family history of heart disease. However further studies on a large sample size will affirm this finding.
Keywords : blood donors, hyperlipidemia, platelet, weight

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