Evaluating Relationship Between White Blood Cells And Platelets During Recovery Phase In Dengue Hemorrhagic Fever Cases In Punjab, Pakistan: A Retrospective Study
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INTRODUCTION
Dengue fever is also known as “breakbone fever”. Dengue virus is transmitted via biting of female mosquito Aedes aegypti [1]. Dengue hemorrhagic fever (DHF) is characterized by hemorrhagic manifestations induced by leukopenia and thrombocytopenia [2]. Dengue virus infection is self-limiting but progression of disease or remittance of infection is measured by observing platelet count and also in some third world countries the diagnosis is also made by measuring a series of components of blood count (CBC) at an interval of twelve hour. A continuous decrease in platelet count is indication of dengue virus infection. In Pakistan where CBC is sole test for detection of dengue and progress of patient toward remission an estimation of platelet count is used to assess the phase of dengue going on and progress of patient toward remission. A decrease in WBC & platelet count is most common manifestation of DHF [1] but during dengue virus infection, a fall in WBC count occurs: because dengue virus induced bone marrow suppression [3-5] and anti-platelet antibodies also cause destruction of platelets through antibody-mediated mechanism [7-8]. A decrease in platelet count is also produced due to combination of platelets with dengue virus infected endothelial cells [5]. During recovery phase, bone marrow become normal and start synthesizing platelets and infected platelets degrades because their life span is 6 hour to 2 day (granulocytes 4-8 hours and agranulocytosis hours to days). Most abundant form of WBC i.e. Neutrophils have life span of only 6-8 hours [9]. Platelet count increases 4-6 days after normalization of bone marrow. Dengue virus reproduction has been stopped because normal life span of platelet is 4-9 days [7]. Platelet count decreased even after dengue virus replication or reproduction has been stopped because anti-dengue antibodies are still clearing infected platelets. Dengue also due to chemokines produced by infected endothelial cells [8-9]. Moreover, there is always established an equilibrium between production and recycling of blood cells. Therefore, synthesis time of platelets will be equal to their life span so that normal constant pool of blood cells is maintained.

OBJECTIVES
The main objective of this study was to investigate relationship between white blood cells and platelets during recovery phase in dengue hemorrhagic fever.

MATERIAL AND METHOD
Retrospective study was performed on CBC reports of recovered dengue patients or patients who are near to recover or undergone at least 8CDRC reports.

Inclusion criteria
Only those patients have been included who undergo series of CBC (complete blood count) at an interval of 12 hours during course of their disease up till recovery of patient or an increase in platelet count more than 100,000.

Number of patients
Study includes 400 recovered dengue patients.

Data collection and analysis
Dengue cases were studied in large teaching hospitals of Pakistan including Shalimar Hospital Lahore, Mayo Hospital Lahore, Bahawal Victoria Hospital Bahawalpur. Data was collected using a preforma designed to collect laboratory record accurate and detailed data of patients during course of treatment and then concerned parameters were analyzed.

RESULTS
Out of 400 patients, 352 were males and 48 were females. Of the 400 patients, 312 of DHF, 87 are of DF and I patient was of DSS. Out of 312 DHF patients, 301 were showed a positive correlation i.e. WBC's increasing and recovery from dengue. However, in 7 patients no correlation was found while other 4 patients showed a negative correlation. In dengue fever patients, only 9 patients showed a positive correlation between WBC and platelet count, these patients have no correlation between WBC and platelet count, as indicated in Figures 1, 2, 3 and 4. During dengue fever infection in DHF, the WBC count falls first and then platelets count fall, and when recovering from dengue, WBC count increases first while platelet count is still falling and then it increase in progressive manner.

CONCLUSION
During treatment of WBC count is gaining better while platelet count is still below normal it is an indication that patient is recovering and viral replication has been stopped or now it's clearing from blood. White blood cells production during recovery phase is a good indicator about recovery of patient from Dengue along with focus on platelet counts.

REFERENCES