

## Abstract

*An Analysis of Discrepancies between Forward and Reverse ABO Blood Grouping*

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**Background:** : An accurate ABO grouping is the most important test which is done in the blood bank. Mistyping either a donor or a recipient can lead to transfusion with ABO incompatible blood which results in severe intravascular hemolysis and may even result in the death of the recipient. ABO grouping consists of testing the red cells with Anti-A and Anti-B reagents for determining the antigens on red cells (Forward or cell type) and testing the serum for expected antibodies by using A1 and B red cells (Reverse or Backtype). ABO grouping should include both forward and reverse procedures, and the results of the two methods should agree with each other. An ABO discrepancy implies that the forward, or red cell, ABO grouping does not agree with the reverse, or serum, ABO grouping. In patients, an ABO discrepancy must be resolved before transfusion of any blood components, and in donors, the discrepancy must be resolved before any blood is labeled with a blood type. This study was made in Tabriz Imam Reza Hospital for evaluation of causes of ABO discrepancies.

**Objectives:** The aim of our study was to evaluate One Hundred cases of discrepancy between forward and reverse ABO blood grouping methods.

**Method and materials:** An analysis of ABO discrepancies was performed on patients during the period from June 2012 to February 2014 in our center. ABO blood groups of patients were determined by forward and reverse methods and the cases of discrepancies were recorded. The root causes and etiologies of

discrepancies were analyzed with clinical details to classify the discrepancies and resolve them with suitable steps.

**Results:** Analysis of discrepancies between forward and reverse ABO grouping and determining the etiology and root causes of discrepancies and resolving it for accurate and reliable ABO grouping. From June 2012 to February 2014, one hundred cases of discrepancy between forward and reverse methods were evaluated to determine the etiology and main cause of discrepancies. Eighty two (82) of the cases of discrepancy were due to age related weak or missing antibody, which had very low levels of antibody production or cannot produce the ABO antibodies. Sixteen (16) of the cases of discrepancies were due to Rouleaux formation and Cold agglutinins. Two cases of discrepancies were A2 individuals which had Anti-A1 in their serum. Accurate and reliable ABO grouping is the most important test in blood banking and transfusion medicine. For this reason, any discrepancy between forward and reverse methods should be resolved before transfusion of blood components.

**Conclusion:** Collected data was shown, implementation of both of cell and serum blood grouping is vital for ABO blood typing. ☒

**Key words:** ABO system , Immune hemolytic reactions , Blood grouping discrepancies