

Qualitative and Quantitative Approaches to Determining Hemolyzed Serum

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Abstract

Background and Objective: Prevention of medical laboratory errors is a major goal of quality control programs. Hemolyzed specimen is one of the common issues causing medical laboratory errors. Apart from the visual assessment, the measurement of serum hemoglobin concentration can be another method to evaluate the intensity of hemolysis. We aimed to assess hemolyzed serum specimens using two quantitative and qualitative methods.

Material and Methods: the serum samples (n=890) were evaluated for the presence and degree of hemolysis, using quantitative and qualitative methods. In qualitative method, the samples were investigated visually and in quantitative with the measurement of serum free hemoglobin concentration. Furthermore, the relative frequency of hemolyzed specimens was calculated.

Results: the hemolyzed samples were 23.4 % in qualitative and 65.8% in quantitative method. In quantitative, 71.2% of the specimens had mild hemolysis (sfHB<50 mg/dL), 26.8% intermediate (50mg/dL< sfHB <250mg/dL), and 2% high (sfHB >250 mg/dL). The percentage of hemolyzed specimens was higher in intensive care unit than those of other departments (P < 0.05).

Conclusion: given that hemolysis in small amount is not detectable visually, we recommend using quantitative method for evaluating hemolyzed specimens.

Keywords: Hemolysis, Diagnostic Errors, Qualitative Research, Quantitative Research