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A comparative study on the effect of sodium citrate and EDTA in erythrocyte sedimentation rate after one and two hours in children and adults

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Abstract:

Background: One of the most common tests performed in the hematology laboratories is erythrocyte sedimentation rate (ESR) test at the first and second hours for monitoring the course of infections, inflammatory diseases and some types of cancers. The recommended method by the international council for standardization in hematology (ICSH) and national committee for clinical laboratory standards (NCCLS) for ESR measurement is based on the traditional Westergren method, using EDTA anticoagulated sample without dilution. But selected method for routine works in laboratories is using sodium citrate while EDTA is used in most other hematological tests. Now if the same blood samples containing EDTA could be used for ESR measurement, it would lead to decrease in laboratory working load as well as the amount of required blood. Methods: Three hundred cases (125 males, 75 females, 79 of the total cases anemic) were included in this study. 150 cases were less than 14 years and 150 cases more than 14 years old. Two blood samples were taken from each patient with EDTA or sodium citrate anticoagulant. We used samples of CBC test as EDTA containing samples. The first and second hour ESR were measured simultaneously for both samples using Westergren method under completely identical conditions and the results were recorded, the ESR results obtained using sodium citrate in the first and second hour were compared with the ESR test results of the same patients with EDTA containing samples by paired t-test. Results: It was observed that there was significant difference between the results of ESR test by using two anticoagulants in adults and anemic cases. But in children, statistical difference between first hour ESR test results using EDTA and sodium citrate was not significant. Conclusion: It can be concluded that if only first hour ESR in children is required, samples containing EDTA can be used which will decrease the amount of required blood to a half. It would also cause a decrease in working load of laboratories.

Keywords:

[Erythrocyte sedimentation rate](#) , [Sodium citrate](#) , [EDTA](#) , [Westergren method](#)

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