



Differences In Abnormal Esr Result Using Disposable Westergren Pipettes With Automatic Tools

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Abstract: Method this is highly recommended by ICSH (International Council For Standarization in Hematologi) while the new automatic method is used because with excesss faster then the why Westegren can reduce of reduce the rise of infeccius material exposure and speed up the reading process without waiting one hours at this time more used. The study aim knowing determind the difference in the value of ESR using the automatic tool and the westegren disposable pipette. This research is a laboratory experimental research using the design of group comparison statistics, wich compares the results between the experimental groups (Disposable westegren pipette groups) and the results of the control group (automatic group). Benefits of the study able to analyze the result on ESR Examination using automatic tools and Westegren disposable pipette. The result of the independent T-Test showed that there was no significant differences (p-value = 0,318) the ESR check can show the same result even thought using manual or automatic method. The average automatic BSR Examination value is 74,76 mm/hours, while the average value of the BSR Examination result with disposable Westegren pipette is 66,43 mm/hours. It wash concluded that in this study there were no signifikan differences in the Westegren disposable automatic and pipette devices.

Keywords: Hemolysis, Hemoglobin, Cyanmethemoglobin.

1. Introduction

Blood Sedimentation Rate (LED) is a hematological examination that is useful for determining plasma column height as a diagnosis of therapeutic support and prognosis with appropriate and precise results, the Westergren method, is highly recommended by ICSH (International Council for Standardization in Hematology)[1].

Westegren's method in blood sedimentation testing has a pipette difference only from the material used and the length of the repetition. Westergren Disposable Pipette is a disposable BSR pipette made of clear Polystyrene that provides perfect visibility of the blood to determine the BSR, a Vaccainer that makes the increase in blood in the pipette to zero [6]. A high-quality fibrous plug is placed on a zero level sign that acts as a barrier that stops harmful substances (blood) through the top of the pipette. The use of this disposable pipette can only be used once because it avoids contamination in the piping [2].

Westergren Disposable Pipette is a Disposable LED pipette made of clear Polystyrene that provides perfect visibility of the blood to determine the BSR, a Vaccainer that makes the blood rise in the pipette to the zero mark. A high-quality fibrous plug is placed on a zero level sign that acts as a barrier that stops the danger substance (blood) through the top of the pipette. The use of this disposable pipette can only be used once because it avoids contamination in the piping. Westergren Rinse Pipette is a pipette made of glass with a length of 30 cm, a diameter of 2.5 mm, a scale of 0-200 mm that can be used several times and can be washed [6].

Automatic way is a tool that can read results faster than the conventional method excess using automatic tools to reduce or reduce the risk of infectious material exposure and speed up the reading process without waiting 1 hour, lack in this way there is still no decision between the results issued whether it has a difference the far or have the same front level using conventional or automatic methods.

2. Research Methodology

2.1. Research methods

This study uses an experimental research method that compares the results of abnormal ESRs on automatic devices and disposable Westergren pipettes.

2.2. Time and Place

This research was conducted on February 18, 2019 at the Dr. Soetomo Regional General Hospital Jalan Mayjen Professor Dr. Moestopo No. 6-8 Surabaya.

2.3. Tools and Materials

The instruments in this study are disposable Westergren pipettes, Westergren tube racks, materials used are venous blood samples, EDTA tubes and 3.8% Sodium Citrate liquid, Roler 20lc tools.

2.4. Procedure

Dilution is carried out using a ratio of 4: 1 (4 parts blood and 1 part sodium citrate 3.8%), blood mixed with EDTA then sodium citrate 3.8% and 175µl EDTA blood taken by the capillary pipette on the device.

This research was carried out with two examination treatments, namely using a disposable westergren pipette (test group) by means of Sodium citrate 3.8% at the lower limit mark, adding blood to the upper limit, input the pipette in the vacuum tube provided by the disposable Westergren pipette package, perpendicular read for 1 hour. In the control group, using an automatic Roler 20LC tool by means of 175 blood samples taken by the capillary pipette which is on the device and read in the rouleaux formation aggregation phase the reading is done for 20 minutes the results come out by printing print on the tool.

3. Result and Discussion

Thirty samples were obtained from respondents who matched the inclusion criteria in this study, which had abnormal BSR results. The majority of respondents were found in female respondents, namely as many as 22 respondents and 8 respondents as male respondents. The gender and age of the respondent have an influence on the results obtained including because each gender and age have different reference values. These results refer to two treatments, namely EDTA blood samples with treatment using the westergren disposable method (test group) and EDTA blood samples treated using automatic tools (as controls).

The difference in abnormal ESR results can be seen in Table 5.1[3]. The results can show that the control group has a lower yield with an average value of 66.43 mm / hour, while the test group has a high examination result with an average value of 74 mm / hour because the blood used is concentrated (without diluent) so that the formation of rouleaux does not occur normally[4]. This is adjusted to the theory which states that the results can be affected by several factors on ESR examination which will cause the formation of rouleaux (aggregate) erythrocytes can take place faster because several factors in BSR examination such as temperature and diameter vibrations in the Westergren pipette are used[5].

The decrease and increase in the value of ESR is influenced by the condition of the body. Increased BSR values indicate an inflammatory process in a person's body both acute and chronic infection or tissue damage. The increase in BSR compared to the previous shows an improvement condition. The benefits of BSR examination can be used to help find a diagnosis of the disease, follow the course of the disease, and distinguish the diagnosis of the disease.

The analysis of the results in this study used a statistical test which showed a significant value of 0.318, meaning that there were no significant differences in the results of the BSR examination used using disposable westergren pipettes and automatic tools. The difference is only as a variation of the number of results of the examination.

Table 1. ESR Test Result

Variabel	Control group			Test group			P-Value
	n	Mean	SD	n	Mean	SD	
ESR	30	66,43 mm/jam	66	30	74,76 mm/jam	27	0,318

4. Conclusion

Based on the results of the research and discussion it can be concluded that there were no significant differences in the results of ESR examinations using automatic and disposable Westergren pipettes.

5. Thank You Note

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6. References

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