

# Platelet Profile in Patients with Dengue Hemoragic Fever-USU Hospital

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Abstract: Medan is a DBD endemic area. There were 15 death cases in 2014 caused by DBD (Dinas Kesehatan Provinsi Sumatera Utara, 2015). In dengue infection case, usually objects/patients will (have/experience/suffer from) trombositopenia after they (have/experience/suffer from) fever which exalate bleeding risk and complication. This research aims to see platelet profile on DBD patients at Rumah Sakit Universitas Sumatera Utara. After gaining ethical clearance, blood samples are taken on the research subject and then trombosit examinations, Mean Platelet Volume (MPV), and Platelet Distribution Width (PDW) are performed using sysmex XT-2000i with impedance method. The gathered results are mean trombosit of the patient is  $93,9 \times 10^3 - 53,5 \times 10^3$ . There are 69,6% of patients have the MPV level  $< 9,6$  fL and 65,2% of them have the PDW level  $,9,2$  fL.

## 1 INTRODUCTION

DBD is a reversible and life threatening dengue vascular complication and related with severe trombositopenia and increased vascular permeability (Jayashree, Manasa, Pallavi, and Manjunath, 2011). Trombositopenia can increase the risk of bleeding and complications in DBD patients (Kumar, Vyas, and Krishna, 2017). Lately, researches show that platelet index such as MPV and PDW can be a sign of platelet activity. The volume of platelet which is a sign of platelet function and activity is assessed based on MPV. Platelet activity will also cause morphology changes from platelet into sferis form side by side with formation of pseudopodia. In the end, platelet with changed form and size can affect PDW value (Navya, Patil, and Kariappa, 2016). Medan is one of many DBD endemic areas. There were 15 death cases in 2014 caused by DBD (Dinas Kesehatan Provinsi Sumatera Utara, 2015). The most prevalence of DBD case is in the group of 5-14 years old female (Departemen Kesehatan RI, 2008). This research aims to see platelet profile on DBD patients at Rumah Sakit Universitas Sumatera Utara.

## 2 MATERIAL AND METHOD

After gaining ethical clearance, samples are taken on the research subject who has filled out the informed concern by purposive sampling. On the selected objects, trombosit examinations, MPV, and PDW are performed using sysmex XT-2000i with impedance method.

## 3 RESULT

This research is done on patients whos come to RS USU from March 2018 to May 2018 and obtained the result that shows 23 DBD patients who met the inclusion criteria where male patients are more that female patients with a percentage of 52,17% (table 1). This result is different from the statement of Departemen Kesehatan RI (2008) that says the most prevalence of DBD case is in the group of 5-14 years old female. This difference occurs might be because men have more activity outside the house, and vise versa.

Table 1. Characteristic of patient

Age (Years)	Male		Female	
	n	%	n	%
< 18	3	13.04	2	8.70
≥ 18	9	39.13	9	39.13
Total	12	52.17	11	47.83

Trombositopenia on DBD or SSD patient might not only be caused by direct platelet destruction by the virus (direct cytotoxicity), but can also be caused by platelet destruction due to binding of specific dengue antibodies with virus infected platelet. The other thing that might happen is that platelet can act as dengue virus replicating place, but this issue still needs further research. This is in line with what is found in this study where the mean platelet of patients is  $93,9 \times 10^3 \pm 53,5 \times 10^3$  uL (table 2).

Table 2. Profil Platelete of patient

No	Test Laboratory	Result
1	Trombosit, Average $\pm$ sd (uL)	$93,9 \times 10^3 \pm 53,5 \times 10^3$
2	Platelet Distribution Width, n (%)	16 (69.5) 7 (30.4)
	• < 9.6 fL	
	• ≥ 9.6 fL	
3	Mean Platelet Volume, n (%)	15 (65.2) 8 (34.8)
	• < 9.2 fL	
	• ≥ 9.2 fL	

Different from the result that was obtained by Gunawan (2010) where the PDW mean value was 9,7 fL, where in this research the result is 69,6% of the patients are with value of PDW < 9,6 fL (table 2). However, for MPV value, this research is in line with what Gunawan (2010) had report, that said MPV mean value was 8,5 fL. As in this research gained result of 65,2% of the patients have the value of MPV < 9.2 fL.

#### 4 CONCLUSION

Trombosit mean of DBD patients in RS USU on March – May 2018 was  $93,9 \times 10^3 \pm 53,5 \times 10^3$  uL. Where 69,6% of the patients have the value of PDW < 9,6 fL and 65,2% of them have the value of PDW < 9.2% fL.

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