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Platelet disorders is common cause of bleeding manifestation pediatrics age group –study at tertiary heath care center CNBC & M.Y. Hospital Indore

Authors
Dr Shailendra Singh Thakur[1], Dr C.V.Kulkarni[2]
[1]Assit. Prof, CNBC & AK, [2]Prof & Head
M.G.M. Medical College with M.Y.H. Indore MP
Corresponding Author
Dr Shailendra Singh Thakur
Email- *shailen.dt@gmail.com*

Abstract
Objectives & Aims: *1) To determine the hematological findings & coagulation profile of the study subjects. 2) To find out relevant clinical findings of study subjects through clinical examination & detail history. 3) To find the correlation of the clinical findings with the hematological findings studied. To establish probable diagnosis in the study subjects. To find the incidence of spectrum of diseases in bleeding disorders. To find the age and sex distribution of the cases studied.*
Material & Methods: *Blood was collected in a sterile EDTA containing tube and processed following our established hospital based laboratory protocol. A complete blood counting including HB%, PCV, Red cell indices, platelet count, total white cell count done by Automated blood cell counter. The all cell count indices including RBC, WBC count with differential along with morphological changes further confirmed by manual oil immersion smear study method. Peripheral smears study was done with field A and B stain and leishman stain.*
Conclusion: *This In our study we found that in most of the cases of thrombocytopenia i.e below 1,50000 count (81%), automated counter give very low platelet counts while on peripheral smear examination, the count is not that much reduced but different morphological variations of platelets like megathrombocytes, platelet aggregates and platelet fragments are found. These variations denote inactive or non functional platelets, hence despite of the low normal or near normal platelet counts , patient present with bleeding.*

Material & Methods

Study area and design- This present study was conducted at the CNBC hospital is a part of MGM Medical College with M.Y. Hospital Indore MP. The study was designed as a observational retrograde with prospective hospital based study over a period of time from 2016 to 2018 years.

Ethical consideration- Blood was collected in a sterile EDTA tube and plaint tube and processed following our established laboratory protocol then generate the report of each patient. Take informed consent was obtained from all study participant for use of your blood sample for medical research after doing physician request investigating and generate the report.

Patient's selection criteria-The study target all

patients on the basis of clinical signs, symptoms and, history by attainder. We include both emergency and IPD patients with all groups, male and female both gender for study. Sample size is 100 patients.

Laboratory investigations Blood was collected in a sterile EDTA containing tube and processed following our established laboratory protocol .A complete blood counting including HB%, PCV, Red cell indices, platelet count and total white cell count and differential was done by Automated blood cell counter and peripheral blood smear examination. The all cell count indices including RBC, WBC count with differential along with morphological changes further confirmed by manual oil immersion smear study method. Peripheral smears study was done with field A and B stain and leishman stain.

Materials

Purple vacutainer tube or capillary collector (EDTA) ethylenediaminetetraacetate, Slides and blue capillary tube, Needle or lancet, Vacutainer holder, Alcohol swab, Cotton balls, Absorbent materials, Slide case and heamatological cell counter.

Procedure

Specimen is collected into EDTA (purple) vacutainer.

Laboratory investigations- Blood was collected in a sterile EDTA containing tube and processed following our established laboratory protocol

A complete blood counting including HB%, PCV, Red cell indices ,platelet count and total white cell count and differential was done by Automated blood cell counter analyzer of all the patient on antiretroviral therapy .The all cell count indices including WBC count with differential and platelet count, was further confirmed by manual oil immersion smear study method. Peripheral smears study was done with field A and B stain and leishman stain.

Hematological examination

Hematological examination including HB%, PCV, Red cell indices, platelet count and total white cell count with differential count should be done on peripheral smears stained with field A and B stain and leishman stain.

Observation & Discussion

Platelets, or Thrombocytes

(from Greek thrombus— «clot» and cyte— «cell»)

- Platelets are produced in blood cell formation (thrombopoiesis) in bone marrow, by budding off from megakaryocytes.
- The physiological range for platelets is 150,000-400,000/cu mm.
- Around 1 x 1011 platelets are produced each day by an average healthy adult.
- The lifespan of circulating platelets is 5 to 9 days.
- The platelets arise from the fragmentation of the megakaryocytes in the bone marrow and circulate in blood as disc-shaped anucleate particles. Megakaryocyte and platelet production is regulated by thrombopoietin, a hormone usually produced by the liver and kidneys.
- Each megakaryocyte produces between 5,000 and 10,000 platelets.
- Old platelets are destroyed by phagocytosis in the spleen and by Kupffer cells in the liver.
- A reserve of platelets are stored in the spleen and are released when needed by sympathetically-induced splenic contraction.

Prolonged tests	No of cases (n=100)
Bleeding time (> 8 min)	35(35%)
Clotting time (> 9 min)	30(30%)
Prothrombin time (> 20 secs)	23(23%)
Partial thromboplastin time (> 40 secs)	12(12%)

Bleeding time is prolonged in 35/100 patients (36%) while clotting time in 30/100 patients (30%). Prolonged prothrombin time is seen in 23/100 study cases (23%) where as activated partial thromboplastin time is inceased in 12/100 cases (12%).

Age in yrs	Number of males	% of males (n=40)	Number of females	% of females (n=48)
0—10	40	40	05	05
11—20	47	47	08	08

most commonly affected age group is found to be 11-20 years

Hematological disorders	Total no. of cases	% (n=100)
Idiopathic thrombocytopenic purpura	23	
Aplastic anemia	15	
Myelodysplastic syndrome	7	
Non Hodgkins lymphoma	1	
Sickle cell anemia	6	
Hemophilia	6	
Malaria	9	
Disseminated Intravascular coagulation	2	
Nutritional anemia	7	
Liver disease	5	
Vitamin K deficiency	7	
Acute myeloid Leukemia	3	
Acute lymphoid Leukemia	5	
Chronic myelogenous leukemia	2	
Chronic lymphoblastic leukemia	1	

Result

Univariate analysis showed that there were significant associations of platelets disorder and bleeding manifestation, mild to marked type changes these various bleeding manifestation changes cause the raised distribution use as a prognostic tool for survival index outcome of patients. Kruskal-Wallis tests revealed an association of raised with severity survival index patients: $p<0.0001$, (Wilcoxon test: $p=0.002$). multivariate analysis showed is a significant prognostic factor ($p=0.040$).

Conclusion

In our study we found that in most of the cases of thrombocytopenia i.e below 1,50000 count (81%), automated counter give very low platelet counts while on peripheral smear examination, the count is not that much reduced but different morphological variations of platelets like megathrombocytes, platelet aggregates and platelet fragments are found. These variations denote inactive or non functional platelets, hence despite of the low normal or near normal platelet counts , patient present with bleeding.

It is also our observation that many patients having hemostatic disorders do not necessarily have prolonged bleeding or clotting time which means that hemostasis is dependent on many other unknown in vitro (technical considerations) or in vivo (over the counter drugs) factors.

Our endeavour here is to evaluate bleeding disorders on the available resources in the department and help the clinicians to have an idea of the hematological changes seen on light microscopy, for deciding the treatment of the diseases.

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