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Thrombocytopenia : Causes, Signs and Symptoms

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Abstract :
Thrombocytopenia is a common hematologic finding with variable clinical expression. To understand more about thrombocytopenia, this article aims to discuss thrombocytopenia in general and will focus on its signs and symptoms as well as its causes.
Introduction :
To begin, thrombocytopenia can be defined as a disorder characterized by abnormally low levels of thrombocytes, commonly known as platelets[1]. Normally, an individual's platelet count ranges from 150,000 to 450,000 platelets per microliter of blood[2], therefore, it more accurate to state that thrombocytopenia is a platelet count below 50,000 per microliter[3]. Moreover, thrombocytopenia often occurs as a result of a separate disorder, such as leukemia or an immune system problem. Another possibility is that it can be a side effect of taking certain medications[4]. Furthermore it affects both children and adults[4], and may be inherited or acquired.[5] Thrombocytopenia may be mild and cause few signs or symptoms. In rare cases, the number of platelets may be so low that dangerous internal bleeding occurs. Treatment options are available.[5] The relevance of thrombocytopenia in the individual patient is variable and depends on the clinical presentation. Because platelets play an essential role in preserving vessel wall integrity, thrombocytopenia is associated with a defect of primary hemostasis[3]. However, the presence of thrombocytopenia can aggravate surgical or traumatic bleeding or prevent the administration of effective treatment for several conditions (eg, antiviral therapy for chronic hepatitis C virus infection or cancer chemotherapy)[5]. In other situations, a low platelet count is the only initial manifestation of an underlying disorder that poses greater risks than thrombocytopenia itself or is an important marker of disease activity.
Discussion :
In general, thrombocytopenia usually has no symptoms and is detected on a routine full blood count (or complete blood count)[1,5]. However, individuals with thrombocytopenia may experience external bleeding such as nosebleeds, and/or bleeding gums. Some women may have heavier or longer periods or breakthrough bleeding. Bruising, particularly purpura in the forearms and petechiae in the feet, legs, and mucous membranes, may be caused by spontaneous bleeding under the skin.[6] Clinically, eliciting a full medical history is vital to ensure the low platelet count is not secondary to another disorder. It is also important to ensure that the other blood cell types, such as red blood cells and white blood cells, are not also suppressed.[6] In addition, person with this disease may also complain of malaise, fatigue and general weakness (with or without accompanying blood loss). Acquired thrombocytopenia may be associated with a history of drug use. Inspection typically reveals evidence of bleeding (petechiae or ecchymoses), along with slow, continuous bleeding from any injuries or wounds. Adults may have large, blood-filled bullae in the mouth.[7] If the person's platelet count is between 30,000 and 50,000/mm3, bruising with minor trauma may be expected; if it is between 15,000 and 30,000/mm3, spontaneous bruising will be seen (mostly on the arms and legs).[8]
As for the causes of thrombocytopenia, they include, first, abnormally low platelet production may be caused by dehydration, Vitamin B12 or folic acid deficiency, Leukemia or myelodysplastic syndrome or aplastic anemia, decreased production of thrombopoietin by the liver in liver failure, sepsis, systemic viral or bacterial infection, leptospirosis, hereditary syndromes, congenital amegakaryocytic thrombocytopenia, thrombocytopenia absent radius syndrome, fanconi anemia, Bernard-Soulier syndrome, (associated with large platelets), May-Hegglin anomaly, Grey platelet syndrome, Alport syndrome, and Wiskott–Aldrich syndrome[9]. Secondly, Increased destruction, in other words, abnormally high rates of platelet destruction may be due to immune or non-immune conditions, including Idiopathic thrombocytopenic purpura, thrombotic thrombocytopenic purpura, hemolytic-uremic syndrome, disseminated intravascular coagulation, paroxysmal nocturnal hemo-

globinuria, antiphospholipid syndrome, systemic lupus erythematosus, post-transfusion purpura, neonatal alloimmune thrombocytopenia, hypersplenism, dengue fever, Gaucher's disease[10], and Zika virus.dication-induced[11]. In addition, thrombocytopenia may be drug-induced, for instance,Valproic acid, Methotrexate, Carboplatin, Interferon, Isotretinoin, Panobinostat, H2 blockers and proton-pump inhibitors can induce thrombocytopenia through direct myelosuppression. Finally, other causes such as snakebite[12], niacin toxicity[13], thrombocytapheresis (also known as Plateletpheresis) or Lyme disease[13] may result in thrombocytopenia.

Conclusion:
To sum up, thrombocytopenia refers to the presence of abnormally low levels of platelets in the circulating blood. Even though thrombocytopenia has no symptoms, in some cases of symptomatic patients, individuals may present with bleeding, petechiae, blotches and bruises. Also, severe thrombocytopenia can cause a lot of bleeding after an injury, such as a fall. Finally, thrombocytopenia can be inherited or it may be caused by a number of medications or conditions, and may affect both children and adults.

References :

1. Deutschman, Clifford S.; Neligan, Patrick J. (2010). Evidence-based Practice of Critical Care. Elsevier Health Sciences. ISBN 1416054766.
2. Jump up ^ "Platelet count: MedlinePlus Medical Encyclopedia". www.nlm.nih.gov. Retrieved 2015-05-01.
3. Jump up ^ "What Is Thrombocytopenia? - NHLBI, NIH". www.nhlbi.nih.gov. Retrieved 2015-05-01.
4. http://www.mayoclinic.org/diseases-conditions/thrombocytopenia/basics/definition/con-20027170
5. Jump up ^ Greer, John P.; Arber, Daniel A.; Glader, Bertil; List, Alan F.; Means, Robert T.; Paraskevas, Frixos; Rodgers, George M. (2013-08-29). Wintrobe's Clinical Hematology. Lippincott Williams & Wilkins. ISBN 9781469846224. Retrieved 2015-05-01.
6. BHATIA, M.P.S. "B.E. PROJECT ON PLATELET COUNT USING IMAGE PROCESSING TECHNIQUES" (PDF). BTP_Report. Retrieved 30 November 2014.
5. Interpreting Signs and Symptoms. Lippincott Williams & Wilkins. 2007. p. 293.
6. Jump up ^ Rosdahl, Caroline Bunker; Kowalski, Mary T. (2008). Textbook of Basic Nursing. Lippincott Williams & Wilkins. ISBN 9780781765213. Retrieved 2015-05-01.
7. Fiebach, Nicholas H.; Barker, Lee Randol; Burton, John Russell; Zieve, Philip D. (2007). Principles of Ambulatory Medicine. Lippincott Williams & Wilkins. ISBN 9780781762274. Retrieved 2015-04-30.
8. Rodak, Bernadette F.; Fritsma, George A.; Keohane, Elaine (2013-12-27). Hematology: Clinical Principles and Applications. Elsevier Health Sciences. ISBN 9780323292696. Retrieved 2015-04-30.
9. Sharp, Tyler; Muñoz-Jordán, Jorge; Perez-Padilla, Janice; Bello-Pagán, Melissa; Rivera, Aidsa; Pastula, Daniel; Salinas, Jorge; Martinez Mendez, Jose; Mendez, Monica; Powers, Ann; Waterman, Stephen; Rivera-García, Brenda (14 July 2016). "Zika Virus Infection Associated with Severe Thrombocytopenia" (PDF). Clin Infect Dis. Clinical Infectious Diseases. 63 (3). doi: 10.1093/cid/ciw476. Retrieved 19 July 2016.
10. Waldmann, Carl; Soni, Neil; Rhodes, Andrew (2008-11-27). Oxford Desk Reference: Critical Care. Oxford University Press. ISBN 9780199229581. Retrieved 2015-05-01.
11. Jump up ^ Dart, Richard C. (2004). Medical Toxicology. Lippincott Williams & Wilkins. ISBN 9780781728454. Retrieved 2015-05-01.