ORIGINAL RESEARCH PAPER
Volume-9 | Issue-4 | April-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

AN ISOLATED CASE OF THROMBOCYTOPENIA PRESENTED WITH HYPOCELLULAR BONE MARROW.

Pathology

Garima Agarwal Assistant Professor, SMSR Sharda University, Greater Noida

Gaurav Garg* Consultant Pathologist, Kansal Path Lab And Diagnostics, New Delhi *Corresponding Author

ABSTRACT

A 26 year male presented to our department with chief complains of fatigue and history of intermittent fever. CBC reveals isolated thrombocytopenia with normal hemoglobin and Total leucocyte count. His platelet count was between 60,000 to 1 lac from last 6 months. He had a history of taking weight gaining drugs that is steroids. To rule out the cause of isolated thrombocytopenia he came to our department for bone marrow aspiration and biopsy. Bone marrow aspiration smears showed predominantly fat element and were hypocellular showing only 2 fragments . Biopsy also revealed only trabecular bone , no cells of erythroid , myeloid and megakaryocytic series were seen. It is well established that levels of marrow fat are higher in older adults with osteoporosis, defined by either low bone density or vertebral fracture. Higher levels of marrow fat in young male are known to occur in conditions of starvation , alcoholism, spinal cord injury and prolonged bed rest , conditions that are also associated with reduced bone density. Medications that increase marrow fat include glucocorticoids and thiazolidinediones(TZDs), highlighting the interconnection of bone formation
and marrow fat accumulation. A decrease in BM cellularity is observed in several hematologic disorders, including aplastic anemia, hypoplastic MDS, and hypoplastic leukemia, and distinguishing one from another is not always easy [14-16]

KEYWORDS

INTRODUCTION:

Acquired thrombocytopenia, not accompanied by anemia and/or leukopenia (defined as isolated thrombocytopenia), is observed in amegakaryocytic thrombocytopenia[1] , infections[2] including human immunodeficiency virus (HIV) infection , nutritional deficiencies[3], alcohol ingestion[4,5] , and primary or secondary immune thrombo cyt openia (ITP)[6].

We observed a patient with isolated thrombocytopenia, who displayed hypocellularity on BM examination that was not associated with significant dysplasia or megakaryocytic hyperplasia.

The present study was performed to define the clinical features and natural history of isolated thrombocytopenia accompanied by marrow hypocellularity probably due to intake of weight gaining drugs that is steroids or it can be a prodrome of aplastic anemia.

CASE REPORT:

A 26 year male presented to our department with a history of fatigue and intermittent fever from 6 months. His CBC reveals hemoglobin 13.30, WBC 4.64, DLC ; Neutrophil- 43, lymphocyte- 47, eosinophil- 5, monocyte- 5. His last platelet count was 60,000. (variating from 60,000 to 1 lac from last 6 months). His all other investigations were normal. His bone marrow aspiration and biopsy was done. Bone marrow aspiration were hypocellular showed predominantly adipose tissue(Figure 1) with only two fragments showing cellularity normocellular for age. Erythroid and myeloid series in those two fragments show normal maturation and unremarkable morphology. However megakaryocytes were increased in number according to number of fragments present in aspiration(Figure 2).Bone marrow biopsy reveals hypocellular marrow with presence of only trabecular bone and absence of hemopoeitic elements(Figure 3). Repeat biopsy was advised which also shows the same.

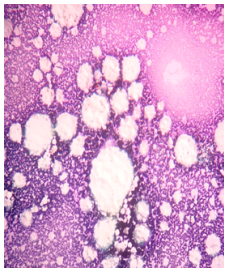

figure 1: Bone marrow aspir ation smears shows pr edom inantly fat.(Leishman- 40x)

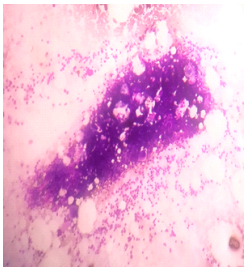

figure 2: Occasional fragment showing hyperplasia of meg akaryocytes (Leishman- 10x)

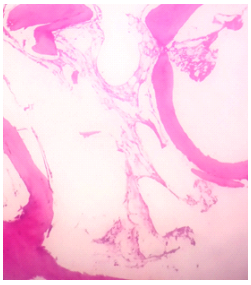

figure 3: Bone marrow biopsy showing only trabecular bone with no hematopoeitic element(Hand E- 40x)

DISCUSSION:

Recently, a significant increase has been observed in incidentally discovered thrombocytopenia, most likely because extensive and regular health examinations are being conducted. If the relevant causes for thrombocytopenia are not determined in these patients, ITP is the most suitable diagnosis. In many cases, however, it is difficult to determine the presence of dyshematopoiesis or megakaryocytic hyperplasia because of the paucity of the cells in BM aspirates and marked hypocellularity and increased fat in BM biopsies.

Higher levels of marrow fat are known to occur in humans due to some hematological disorders and also in conditions of starvation [7,8], alcoholism [9], spinal cord injury [10], and prolonged bed rest [11], conditions that are also associated with reduced bone density. Medications that increases marrow fat include glucocorticoids [12] and thiazolidinediones (TZDs)[13], highlighting the interconnection of bone formation and marrow fat accumulation.

In the present study, our patient showed thrombocytopenia which is isolated accompanied by hypocellular marrow can be due to intake of drugs that is steroids or represent the early manifestations of aplastic anemia, MDS, or temporary BM depression of unknown cause. Repeat bone marrow biopsy also showed the same findings.

These observations suggest that longer follow-up is required in this patient who do not show any changes in CBC during short-term follow-up. If the patients in the present study had not undergone BM examination, they would have been classified as having ITP. Thus, BM examination and history of drug intake may be necessary even in isolated thrombocytopenia. Taken together, these findings lead us to propose a provisional diagnosis of isolated thrombocytopenia accompanied by hypocellular marrow for patients who display platelet counts below 100×10^9/L and hypocellularity that is not associated with

megakaryocytic hyperplasia or significant dysplasia on BM examination.

In conclusion, isolated thrombocytopenia accompanied by hypoc ellular marrow encompasses a group of heterogeneous conditions, and its subgroups represent the early manifestations of aplastic anemia, MDS, or temporary BM depression of unknown cause. Regular follow-up and proper drug history is therefore mandatory in patients with this condition, and a large-scale observational study is warranted.

REFERENCES:

1. Hoffman R, Bruno E, Elwell J, et al. Acquired amegakaryocytic thrombocytopenic purpura: a syndrome of diverse etiologies. Blood. 1982;60:1173–1178.
2. Passos AM, Treitinger A, Spada C. An overview of the mechanisms of HIV-related thrombocytopenia. Acta Haematol. 2010;124:13–18
3. Ghosh K, Sarode R, Varma N, Varma S, Garewal G. Amegakaryocytic thrombocytopenia of nutritional vitamin B12 deficiency. Trop Geogr Med. 1988;40:158–160.
4. Perlman MK, Schwab JG, Nachman JB, Rubin CM. Thrombocytopenia in children with severe iron deficiency. J Pediatr Hematol Oncol. 2002;24:380–384.
5. Scharf RE, Aul C. Alcohol-induced disorders of the hematopoietic system. Z Gastroenterol. 1988;26(Suppl 3):75–83.
7. BredellaMA,FazeliPK,MillerKK,MisraM,TorrianiM,ThomasBJ,etal. Increasedbo nemarrowfatinanorexianervosa. J ClinEndocrinolMetab (2009) 94:2129–36. doi:10. 1210/jc.2008-2532
8. EcklundK,VajapeyamS,FeldmanHA,BuzneyCD,MulkernRV,KleinmanPK, etal.Bonemarrowchangesinadolescentgirlswithanorexianervosa. J Bone MinerRes (2010) 25:298–304.doi:10.1359/jbmr.090805
9. MaurelDB,BoisseauN,BenhamouCL,JaffreC.Alcoholandbone:review ofdoseeffectsandmechanisms. OsteoporosisInt (2012) 23:1–16.doi:10.1007/ s00198-011-1787-7
10. MinaireP,EdouardC,ArlotM,MeunierPJ.Marrowchangesinparaplegic patients. CalcifTissueInt (1984) 36:338–40.doi:10.1007/BF02405340
11. TrudelG,PayneM,MadlerB,RamachandranN,LecompteM,WadeC,etal. Bonemarro wfataccumulationafter60daysofbedrestpersisted1yearafter activitieswer eresumedal ongwithhematopoieticstimulation:thewomen international spacesimul ationfore xpl orationstudy. J ApplPhysiol (1985) 2009(107):540– 8.doi:10.1152/ja pplp hysio l.9 1 530.2008
12. Vandebergbc,malghemj,lecouvetfe,devogelaerjp,maldagueb,Houssiau FA. Fatco nvers ionoffemoralmarrowinglucocorticoid-treatedpatients:across- sectiona landlon gitudin alstudywithmagneticresonanceimaging. Arthritis Rheum (1999) 42:1405–1 1.doi:10.1 002/1529-0131(199907)42:7
13. Greya,Beckley V, Doyle A,fenwicks,horneam,gamblegd,etal.Pioglita-zoneincreasesbonemarrowfatintype2diabetes:resultsfromarandomized controlledtrial. Eurjendocrinol (2012) 166:1087–91.doi:10.1530/EJE-11-1075.
14. Varma N, Varma S, Marwaha N, Garewal G. Aplastic anaemia versus hypocellular myelodysplastic syndrome. Indian J Cancer 1995;32:110–115.
15. Lorand-Metze I, Meira DG, Lima CS, Vassallo J, Metze K. The differential diagnosis between aplastic anemia and hypocellular myelodysplasia in patients with pancytopenia. Haematologica 1999;84:564–565.
16. Bennett JM, Orazi A. Diagnostic criteria to distinguish hypocellular acute myeloid leukemia from hypocellular myelodysplastic syndromes and aplastic anemia: recommendations for a standardized approach. Haematologica 2009;94:264–268.