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TO STUDY BONE MARROW ASPIRATE AND BONE MARROW BIOPSY IN THOSE HEMATOLOGIC DISORDERS IN WHICH THE PERIPHERAL BLOOD SMEAR EXAMINATION RESULTS ARE INCONCLUSIVE.

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Abstract
Background & Method: Present study is done with an aim to study bone marrow aspirate and bone marrow biopsy in those hematologic disorders in which the peripheral blood smear examination results are inconclusive. The selection of cases were based on the clinical examination and peripheral blood picture of patients attending the haematology department in which the findings of peripheral blood smear were unexplained or inconclusive and bone marrow examination was warranted.
Result: A difference in extent of blast cell infiltration between the aspirate and biopsy sections. Extent of blast cell infiltration was higher in biopsy than in the aspirate. Residual erythropoiesis was seen in small islands in biopsy but noticeably absent in the aspirate smears. Distribution pattern of megakarycytes was affected and they were either widely scattered or localized in small clusters, while they were not found in aspirate smear. 12 cases (63.2%) showed early megaloblasts, 05 cases (26.3%) exhibited late normoblasts and 02 cases (10.5%) had macronormoblasts in their bone marrow aspirate. 17 cases (89.5%) showed giant metamyelocytes and 15 cases (78.9%) had dysmegakarypoiesis.
In present study in all cases (100%) megaloblasts were found. Reduced M:E ratio was seen in 94.7% cases. 84.2% cases were hypercellular. In 94.7% cases giant metamyelocytes and in 89.5% cases increased iron stores were noted. Peripheral smear gave only the rough idea of the diagnosis Bone marrow aspirate was the most helpful in making the diagnosis. Morphology of megaloblasts was best appreciated in bone marrow aspirate. Bone marrow biopsy gave better idea of cellularity.
Conclusion: Peripheral smear gave only the rough idea of the diagnosis in cases of Megaloblastic anemia. Bone marrow aspirate was the most helpful in making the diagnosis. Morphology of megaloblasts was best appreciated in bone marrow aspirate. Bone marrow biopsy gave better idea of cellularity. Out of 19 cases 94.7 cases were diagnosed on bone marrow aspirate and in only 5.3 cases bone marrow biopsy had added advantage.
Keywords: bone marrow, aspirate, biopsy & hematologic.

Introduction

Bone marrow examination is carried out, clear diagnostic goals about the information to be obtained from the procedure should be defined, before the procedure, we should decide whether any special studies are needed so that all the necessary specimens may be collected and handled correctly[1]. Clearly, the decision to perform a bone marrow examination as well as choice of tests to be performed using the material should be performed using the material should be made on an individual basis[2].In Anglo-American nations bone marrow diagnostics are totally in the possession of haematopathologists, though in mainland Europe suction spreads are regularly analyzed by hematologists, while borer biopsies are dealt with by pathologists[3].The strategy known as trepanning or trephination of bone is the most seasoned careful practice that keeps on having clinical significance in present day times. The strategy dates as far back as the Neolithic time frame and at first involved the boring of cranial bones as a type of clinical intercession for migraines and mental illnesses[4]. Anyway it was not until 1905, when the Italian doctor Pianese announced bone marrow invasion by the parasite Leishmania, that this strategy was applied towards clinical assessment.

Assessment of bone marrow by needle yearning had been accessible beginning around 1929, however it was of restricted worth in evaluating cellularity, geology and central infection. Bone marrow biopsy was initially endeavored by open a medical procedure as wedge biopsy. Marrow biopsy by careful borer is a more established technique than needle. It is just since the last part of the 1950s that center needle biopsy of the bone goal marrow has been broadly utilized. Since that time, it extensively affects analytic hematology, pathology and oncology[5].

Material & Method

The present study comprises of cases, from patients attending the haematology OPD/Ward of Amaltas Institute of Medical Sciences, Dewas, M.P. from May 2019 To April 2020. The selection of cases were based on the clinical examination and peripheral blood picture of patients attending the haematology department in which the findings of peripheral blood smear were unexplained or inconclusive and bone marrow examination was warranted.

1. Anticoagulated specimens were checked with two applicator sticks to ensure that no clots were present. A small drop of blood was placed on the surface of a clean glass slide near the end. An edge of the spreader slide was placed on the first slide to the left of the drop of blood and is pulled to the edge of the drop. The angle between the two slides varied according to the size of the drop and the viscosity of the blood. The larger the drop and the lower the hematocrit of the blood, the greater the angle made to avoid running off the slide when spreading. Blood with a high hematocrit spreaded with a lower angle. The approximate angle for normal blood was 30 to 40 degrees.

2. The drop of blood was allowed to bank evenly behind the spreader which is then pushed to the left in a smooth, quick motion. The more rapid the motion, the shorter and thicker the smear, the smear covered approximately half the slide with a gradual transition from thick to thin. No ridges were present and the end (called the "feather edge") was smooth and even. In the feather edge the red blood cells were not overlapped. The smear was labeled on the frosted edge of the slide or the thick end of the blood with the patient's last name, first name, specimen number and date.

Results

Table No 01: Extent of blast infiltration

Blasts	No of BM aspirate	Percentage	No of BM biopsy	Percentage
20-35%	2	33.3	1	16.7
35-50%	3	50	1	16.7
50-75%	1	16.7	3	50
>75%	0	0	1	16.7
Total	6	100	6	100

Above table shows a difference in extent of blast cell infiltration between the aspirate and biopsy sections. Extent of blast cell infiltration was higher in biopsy than in the aspirate.
Residual erythropoiesis was seen in small islands in biopsy but noticeably absent in the aspirate smears. Distribution pattern of megakarycytes was affected and they were either widely scattered or localized in small clusters, while they were not found in aspirate smear.

Table No 02: Bone marrow aspirate findings:

Features	No of Patients	Percentage
Early megaloblast	12	63.2
Late megaloblast	5	26.3
Macronormoblast	2	10.5
Giant metamyelocyte	17	89.5
Dysmegakaryopoiesis	15	78.9

12 cases(63.2%) showed early megaloblasts, 5 cases(26.3%) exhibited late normoblasts and 2 cases(10.5%) had macronormoblasts in their bone marrow aspirate.17 cases(89.5%) showed giant metamyelocytes and 15 cases(78.9%) had dysmegakarypoiesis.

Table No 03: Bone marrow biopsy findings:

Features	No of patients	%
Hypercellularity	16	84.2
Reduced M:E ratio	18	94.7
Megaloblasts	19	100
Giant metamyelocytes	18	94.7
Increased iron stores	17	89.5

In present study in all cases (100%) megaloblasts were found. Reduced M:E ratio was seen in 94.7% cases. 84.2% cases were hypercellular. In 94.7% cases giant metamyelocytes and in 89.5% cases increased iron stores were noted. Peripheral smear gave only the rough idea of the diagnosis Bone marrow aspirate was the most helpful in making the diagnosis. Morphology of megaloblasts was best appreciated in bone marrow aspirate. Bone marrow biopsy gave better idea of cellularity

Discussion

Dyserythropoietic changes were more subtle in the bone marrow biopsy when contrasted with bone marrow suction however were shown by erythroid hyperplasia and muddled erythroid settlement formation[6].

Bone marrow biopsy showed strange restriction of youthful antecedents (intratrabecular bunches of myeloid forerunners) Megakaryocytic irregularities were better valued in biopsy area.

The finding of MDS depends on a blend of information including clinical status, morphologic assessment of the fringe blood (PB) smear, BM suction and biopsy just as cytogenetic analysis[7]. It isn't unexpected a determination of prohibition and BMB is important to bar different conditions related with cytopenia, like Aplastic Anemia (AA) or a metastatic interaction. Around 12 % of MDS patients present with the hypocellular variation of MDS, along these lines raising a differential finding with AA. The utilization of the FAB grouping (1982) on areas has permitted a superior connection among's cytology and biopsy[8]. In the course of the most recent fifteen years, the presentation of BM biopsies in MDS has prompted thought of histological prognostic boundaries like cellularity, fibrosis, Abnormal Localization of Immature Precursors (ALIP) and CD34 positive impacts Dr Françoise Delacrétaz, Privat-Docent, Institute of Pathology of the University Hospital (CHUV), CH-1011 Lausanne[9].

Conclusion

Peripheral smear gave only the rough idea of the diagnosis in cases of Megaloblastic anemia. Bone marrow aspirate was the most helpful in making the diagnosis. Morphology of megaloblasts was best appreciated in bone marrow aspirate. Bone marrow biopsy gave better idea of cellularity. Out of 19 cases 94.7 cases were diagnosed on bone marrow aspirate and in only 5.3 cases bone marrow biopsy had added advantage.

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