Week 6 Case Study C Hematology and Hemostasis

Name:

Institution:

Q1. The abnormal results that were seen in the laboratory testing performed on the patient include the white blood count of white blood cells, red blood cell and the red blood indices which were high than that of a normal person. The white blood count was 25 /l, red blood cell counts 24.1 and the red blood indices 86.1. the white blood cell identification relative percentage absolute rate was also abnormal which was 30.8. There was also an abnormally high range of lymps which was 112.8 than that of a healthy person. Monos 20.5, 00 basos 0.0, promyelocytes 7619.0 and blasts 82.0 gotten from the results where abnormal. Normocytic, normochromic, few schistocytes also were abnormal. Fibrinogen of 78 mg/l was abnormal too. Prolonged PTT and PT.

Q2. The conditions of the patient were chronic and not acute since the tests were not too severe. From the results the patient has an isolated elevation of the PTT and acquired inhibitor was detected which was factor VIII, which prolonged the PPT but not PT. Before the patient was normal, he recently noticed excessive bleeding of his gums after brushing his teeth from nowhere which suggests that the conditions had not become so severe to be in chronic condition. The patient also had signs and symptoms of weak bone marrow, bleeding which commonly relates to thrombocytopenia.

Q3. Cytochemical staining was important as it is useful since myeloblasts were positive for myeloperoxidase, and monocytic elements stain with nonspecific esterase. Myeloperoxidase will also be detected by flow cytochemical staining using anti-myeroxidase antibody.

Q4 (a) Myeloperoxidase- it that reacts with granules of myeloid and monocytic cells where it distinguishes myeloid from lymphoid blasts.

Sudan Black B positive- it reacts with acid phosphatase which is ubiquitous. T – lymphocytes and lymphoblast will have a dot like and show intense positivity patient will while the activity of other cells will diffuse through.

Chloroacetate esterase positive- reacts with isoenzymes in the diagnosis of hairy cell leukemia.

Alpha-naphthyl butyrate esterase negative- it is an enzyme that reacts with monocytic cells hence distinguishing monocytes from myeloid or lymphoid.

Periodic Acid Schiff negative- it reacts with glycogen and mucopolysaccharides. It will stain positive in the erythroid for erythroblasts leukemias (Chitlur, & Lusher, 2014).

(b) Myeloperoxidase positive- the cell lines that will react with are blood cells such as red blood cells, white blood cells, and platelets.

Sudan Black B positive- it is oxidized with T-Lymphocytes and lymphoblast

Chloroacetate esterase positive- it will react with cell leukemia

Alpha-naphthyl butyrate esterase negative- it reacts with monocytes

Periodic Acid Schiff negative- reacts with glycogens and erythroid.

Q 5 (a) It is a test that is used to evaluate the number and the structure of chromosomes of a person to check the abnormalities. Once the chromosomes are collected, they are cultured in media in the laboratory. They are stained in the slide and placed under the microscope for the analysis. The pictures are taken and the total number of chromosomes taken. The chromosomes are then arranged regarding their size. Then cytogeneticist starts sorting the chromosomes by comparing the length of the chromosomes, the placement of the centromere and the sponges, and the location of the G- bands. They are then numbered from the largest to the smallest with their

match. The results are then determined depending on the sex of the person. (Chitlur, & Lusher, 2014).

Q5 (b) The clinical importance of cytogenetic analysis is necessary as it is useful in carcinogenesis elucidation. Abnormalities in cytogenetic analysis may be due to hepatosplenomegaly, elevated lactate dehydrogenase, hypercalcemia or immunophenotype which are all indicators of clinical severity of ATLL.

Q6. Based on the physical examination results for the patient, his group ALL-L3 subtype which is associated with mature B- phenotype and t (8; 14) chromosome translocation. Second subgroup is L1 and lastly L2.The FAB group for the patient is ALL.

Q7. Based on my answer of question 6 CD10 for the patient will be positive, CD13 will be positive, CD33 will be positive, CD34 will be negative, CD11b will be both positive and negative, CD14, Glycophorin A will be negative, HLA-DR no signs.

Q8. The likely causes of coagulation results may include deficiency of vitamin k, warfarin, liver disease and factor VII deficiency. All these possible causes of coagulation prolonged PT, which is responsible for evaluating the extrinsic pathway of coagulation factors II, V, VII, X, and fibrinogen.

Q9. The likely prognosis and therapeutic for patient with this kind of disorder may be several namely:

Prevention of bleeding , avoidance of contact sport, practicing of good oral hygiene, use of particular immunization techniques, treatment of acute bleeding immediately when it do occur, appropriate replacement therapy after trauma. Local control such as in topical thrombin preparations, absorbable hemostatic agents like gelatin sponges, oxidized regenerated cellulose

and microfibrillar collagen among others. Also, desmopressin, antifibrinolytic therapy recombinant factor Vlla and treatment of long -term complications can be used for medication.

References

Chitlur, M., & Lusher, J. (2014). Factor VIII and IX Inhibitors in Hemophilia. *Hemostasis and Thrombosis*, 82-92.