Case Report

Indian Journal of Trauma and Emergency Pediatrics
Volume 7 Number 1, January -March 2015

Rare Bleeding Disease: Von Willebrand Disease Type 3

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Abstract

Von Willebrand Disease though most common hereditary bleeding disorder [1, 2] in our setup it is rarely diagnosed. And type 3 which is rarest of all is due to total absence of VWF [1, 3]. It is difficult to treat and serious complications like intracranial bleed are associated with this type. Hereby we are reporting VWD type 3.

Keywords: Von Willebrand Disease (VWD); Von Willebrand Factor (VWF); Factor VIII.

Introduction

14 year old female was referred to us from gynecologist for evaluation. She had history of menorrhagia and continuous bleeding PV for 1 month at the time of menarche. The bleeding had not stopped even after taking hormones and tranexamic acid.

When she was brought she was severely pale, tachycardia was present, BP was normal. No jaundice, no hepatosplenomegaly, no sternal tenderness, No petechiae, no purpura. There was no such past history except for prolonged menstruation for 1 week and epistaxis sometimes. No family member had suffered from any bleeding disorder.

On evaluation, CBC showed that her Hb was 4gm% with normal TLC and Normocytic Normochromic picture on peripheral smear. Her retic count was normal. LFT and RFT were absolutely normal. USG revealed normal findings. Thyroid function tests were normal.

aPTTK was grossly prolonged but prothrombin time was normal. Her bleeding time and clotting time both were markedly prolonged. With such presentation it was some bleeding disorder.

It was not factor deficiency alone as bleeding time was also prolonged. Although bleeding time was prolonged, platelet count was normal. There was some defect in platelet function too. With above findings provisional diagnosis of von Willebrand Factor Deficiency (VWD) was made.VWF which has role in both factor VIII activity and platelet function.

Hematologist opinion was taken to confirm the diagnosis and type of disease. Where her factor VIII levels were 3% .VWF antigens was not detectable at all.

(VWF: RCO) Von Willebrand Ristocetin activity was absent. Both standard dose as well as low dose Ristocetin platelet aggregation was absent. It shows abnormal platelet aggregation.

So with above findings, type 3 von Willebrand factor deficiency, which is rarest of all the types (1: 250000) [1], was diagnosed as there was total absence of VWF.

Discussion

VWF is a large multimeric glycoprotein required for normal platelet function and factor VIII function. It is carrier protein for factor VIII as well. Severe deficiency of VWF can lead to secondary deficiency of factor VIII called as 'Autosomal Hemophilia' as VWF is inherited autosomally [1, 4, 5].

There are three types of VWD:

Type 1: VWF is quantitatively deficient. Type 2: VWF is qualitatively abnormal. *Type 3:* VWF is totally absent.

Type 2A: In this type abnormal proteolysis of VWF occurs, so only smallest VWF multimers are present. This results in reduced VWF antigen. And VWF activity is decreased out of proportion to the antigen.

Type 2B: In this type mutations cause hyperactive VWF which binds rapidly with platelets and gets

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rapidly cleared with platelets. So thrombocytopenia is present.

Type 2M: In this type there is reduction in binding function of VWF with platelets so VWF activity is significantly lower than VWF antigen levels but factor VIII levels are normal in this type.

Type 2N: There is reduction of factor VIII binding to VWF so it is also known as autosomal hemophilia. Factor VIII levels are low but VWF interaction with platelets is normal.

In type 3 which is the rarest type. There is total absence of VWF. So levels of VWF antigen are undetectable. Factor VIII levels are between 1 to 3%. Major hemorrhages are common with type. Like intracranial bleeding, menorrhagia [1, 7], epistaxis.

Treatment

In our case type 3 VWD DDAVP (Desmopressin) [1, 6] will not help as it is known to release VWF and increase its levels to 3 to 5 folds but it is hardly beneficial in type 3 where VWF is totally absent.

So we treated her with packed red cell as her Hb was 4% and Fresh frozen plasma and factor VIII. As VWF concentrate was not easily available in our set up. Her bleeding was stopped.

With gynecological advice we kept her on low dose combined OC pills.

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