

Von Willebrand disease in a neonate: A case report

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Abstract

Von Willebrand disease (VWD) is a constitutional bleeding disorder of autosomal inheritance characterized by a quantitative or functional abnormality of the factor Willebrand. We report the observation of a neonate with a confirmed diagnosis of von Willebrand disease in the neonatal period.

This disease is a very heterogeneous clinically, phenotypically and genetically, and poses a diagnostic difficulty. The biological diagnosis is based on first-line tests (prothrombin level and activated partial thromboplastin time) completed by the measurement of the coagulant activity of factors VIII, IX and XI, as well as the activity and antigen of Von Willebrand factor (VWF). The treatment strategy for VWD should be considered in collaboration with a hematologist aiming to correcting VWF and factor VIII levels. Therefore, a recombinant VWF concentrate has recently been introduced and has proven to be effective.

Keywords: Coagulation; Hemorrhage; Hemostasis; Platelets.

1. Introduction

Von Willebrand factor is a protein involved in primary hemostasis (platelet adhesion to the subendothelium and platelet aggregation) and in the transport of coagulation factor VIII. Willebrand's disease, corresponding to a quantitative or qualitative abnormality of this factor, is the most frequent constitutional bleeding disorder [1,2].

We report the observation of a neonate with a confirmed diagnosis of von Willebrand disease in the neonatal period.

2. Case report

We report the case of a female newborn delivered by vaginal delivery, Apgar 6/7/10, birth weight 3800g, mother aged 20 years primiparous, negative infectious history admitted for respiratory distress on perinatal asphyxia. Assessment on admission showed anemia at 12, normal platelet count, transfontanellar ultrasound showed intraventricular hemorrhage associated with intraparenchymal hematoma and biventricular hydrocephalus classified as stage 4.

Neurologic CT-scan was in favor of a thalamic intraparenchymal hematoma measuring approximately 18x22mm, bilateral intraventricular hemorrhage and biventricular hydrocephalus, with a diffuse hypodense aspect of the subcortical and periventricular white matter related to the edema. (figure)

A blood count was performed, prothrombin rate was at 81%, activated partial thromboplastin time at 41.8 seconds, and a coagulation factor assay: factor VIII activity was at 17%, von Willebrand factor activity at 17.8% and VW factor antigen activity at 15.6%, suggesting von Willebrand disease. The newborn was put on anticonvulsants, and received factor VIII

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OCTANAT at day 4 of life. The evolution was good, with no hemorrhagic or neurological signs, and a good psychomotor and statural development after 2 years follow-up.

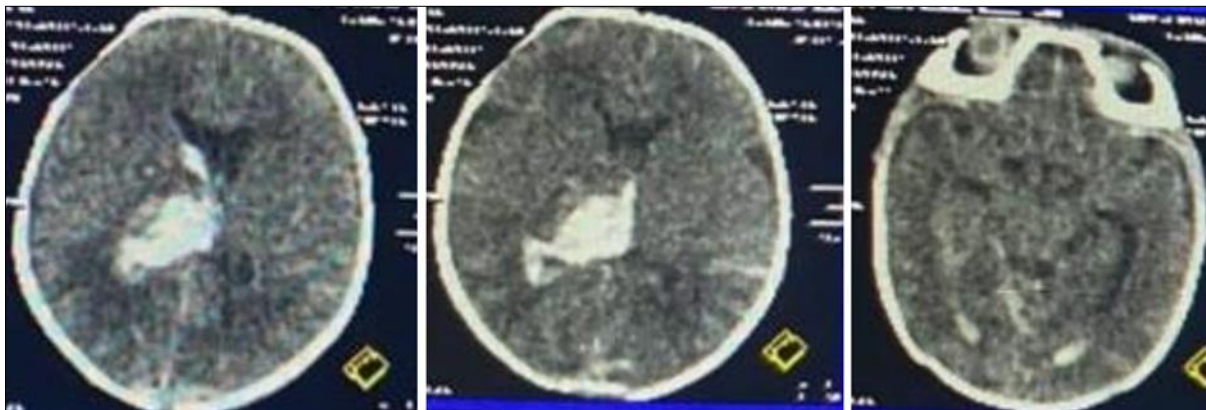


Figure 1 Cranial CT-scan showing thalamic intraparenchymal hematoma and intraventricular hemorrhage in a newborn at 2 days of life

3. Discussion

Von Willebrand disease is a constitutional bleeding disorder of autosomal inheritance characterized by a quantitative or functional abnormality of Willebrand factor (VWF) according to the international nomenclature. Its prevalence is about 1% [1,2]. It is a very heterogeneous condition clinically, phenotypically and genetically and poses a diagnostic challenge [3]. It is responsible for a symptomatology mainly in the form of cutaneous-mucosal hemorrhages, or bleeding caused by trauma or an invasive procedure, but can also lead to gastrointestinal hemorrhages and hemarthrosis in the most severe forms [4,5].

In our case, the patient had an intraparenchymal hematoma that was discovered incidentally after a cerebral CT-scan and transfontanelar ultrasound in the presence of anemia in the newborn. Routine biological tests are essential, but sometimes insufficient, to detect VWD. They are performed when exploring a bleeding syndrome, assessing the risk of bleeding preoperatively, or when there is a family history of bleeding. These first-line biological tests include a blood count, prothrombin level (PT), partial thromboplastin time (PTT) and functional fibrinogen assay. APTT prolongation may be found in VWD, usually in relation to the associated decrease in FVIII. However, this prolongation is inconsistent and a normal APTT does not rule out VWD. Therefore, in the case of a proven bleeding syndrome, the first-line tests should be complemented by measurement of the coagulant activity of factors VIII, IX and XI, as well as VWF activity and antigen [6,7,8].

Plasma levels of Willebrand factor are subject to numerous physiological variations that can complicate diagnosis or vary clinical symptomatology over time. More specialized tests will allow the classification of Willebrand disease into different types and subtypes, with different therapeutic management. In our patient, the prothrombin level was normal, the activated partial thromboplastin time was prolonged, and the coagulation factor assay showed a decrease in factor VIII activity to 17.4%, von Willebrand factor activity to 17.8%, and vWF antigen activity to 15.6%, suggesting VWD. The therapeutic strategy for VWD should be considered in collaboration with hematologist or a reference center for the treatment of hemophiliacs and other bleeding disorders. The goal is to correct VWF and FVIII levels. Treatment is based on three main principles: increasing plasma VWF levels by endothelial secretion (desmopressin), infusion of VWF concentrates with or without factor VIII, and the use of nonspecific agents [9,10]. Our patient received an intravenous infusion of factor VIII.

4. Conclusion

Although originally described more than 90 years ago, von Willebrand disease is still undergoing new advances. More specialized tests will make it possible to classify von Willebrand disease into different types and subtypes, each with different management. In terms of therapy, a recombinant VWF concentrate has recently been introduced in the United States and has proven to be effective.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

Statement of informed consent

Informed consent was obtained.

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