

Study of Kidney Parameters for Patients with Hemophilia and Von Will Brand Patients Infected with Hepatitis B and C

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Article History: Submitted: 20.09.2019

Revised: 25.11.2019

Accepted: 23.12.2019

ABSTRACT

Hemophilia A and Von Willebrand are genetic diseases caused by the deficiency or malfunction of one of the coagulation factors. Hemophilia is caused by the absence of Factor VIII (F.VIII). Von Willebrand is caused by a deficiency or disorder of von Willebrand factor (VWF). This study included 50 patients of both diseases, 35 Hemophilia type A from males and 15 Von Willebrand patients from both sexes. The results show significant decrease ($P \leq 0.05$) in the value of Concentration of calcium ions to each of Hemophilia A and Von Willebrand compared with control, Potassium ions and sodium Na showed no significant differences between hemophilia A and von

Willebrand compared with healthy subjects. From the same table, there was no significant difference between hemophilia A and von Willebrand for all studied mineral parameters (Ca, K and Na).

Key Words: Hemophilia , Von Will brand, Ca, K , Na

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DOI: [10.5530/srp.2020.1.04](https://doi.org/10.5530/srp.2020.1.04)

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INTRODUCTION

Hemophilia A is a hereditary disease caused by the lack of the eighth coagulation factor (F.VIII) in the blood, and is the most common in comparison to other types. Hemophilia B is the lack of factor (F.IX). Type A occurs in one male per 5000 males, and Type B occurs at 1 in 40,000 (1). Hemophilia can be diagnosed at birth through family history or post-hemorrhagic (2). The concentration of plasma coagulation factors is measured to determine the severity of the disease. The normal level of clotting activity in the blood is 50-100%. If 1% of the normal level of thrombolytic activity is known as severe hemophilia, moderate hemophilia ranges from 1-5% Hemophilia medium 5-45%(1) In the case of severe hemophilia, hemorrhage can occur without any shock (spontaneous bleeding). It is more dangerous and frequent than hemophilia. Hemophilia is usually diagnosed during the first year due to non-natural bruising or spontaneous bleeding. Other forms of moderate and moderate hemophilia The diagnosis occurs especially late in the hemophilia medium occurring after a period of time (3) As for the symptoms of hemophilia, it depends on the severity and that about 60% of cases occur bleeding in the joints, including knees and followed by elbows, ankles and shoulders and lead to chronic bleeding to inflammation of cartilage articular and arthralgia, which leads to disability. Other symptoms include muscle hemorrhage, the second most common bleeding, involving about 30% of bleeding (4). Hemorrhagic episodes also occur in soft tissue or prolonged hemorrhage after surgery or after the procedures of the dentist for hemophilia patients. The diagnosis is confirmed by measuring the coagulation factor in the blood (5). Von Will brand is a hereditary autosomal dominant caused by a deficiency in the von Will brand factor, which is more susceptible to hemorrhage, and is estimated to have about 11% of the world population. VWF is produced by endothelial cells found in different tissues, precursors Platelet Precursor and Giant Cells (Megakaryocytes)(6), Von Will brand plays an important role in the blood balance

(7), It also has several functions where it is linked to the blood vessels in the damaged area of the damaged blood vessel and helps (VWF) to assemble the platelets and thus form the plug (Platelet plug, and is the protein carrier Factor VIII (FVIII) and prevents the destruction of Factor VIII(8), Von Will brand's disease is a common genetic disease caused by a defect in the quantity or quality of von Will brand's agent.

Von Willibald's disease was divided into three species:

Type I: Characterized by the quantitative deficiency of the agent von Will brand on average.

Type II: Characterized by defect in the quantity and quality of the von Will brand factor.

Type III: Rare and has a total deficiency in the von Will brand factor.

The second type is divided into four subsections:

- Type 2A: characterized by a lack of platelet adhesion
- Type IIB: There is a defect or a correlation between the agent von Will brand factor VIII
- Type 2M: It is characterized by the lack or lack of receptors on the surface of the blood platelets that are associated with the von Willibald factor
- Type 2N: There is a lack of correlation between Factor VIII and von Will brand factor (9)

MATERIALS AND METHODS

Blood samples

Blood sample were collected from hospitals in Waist province during the period from November 2016 to April 2017. This study included (50) patients. The study included (50) patients from both diseases divided into 35 hemophilia A patients and their male sex group, aged between (1-28)

year. And 15 von Will brand patients from both sexes, compared with a control group which included 25 people (13) male and (12) female, 3 ml of venous blood were withdrawn from both patient and control, placed(4) ml of blood in a normal tube containing Gel Gel Clot Activator Tubes for the conduct of biochemical tests, and then placed in the centrifuge at 3000 cycles for a minimum of 15 minutes to separate the serum from the rest of the cellular

components of blood and then the serum was transferred to test tubes Eppendorf tubes by Micropipette micro pipette and kept at -20°C until the required analyzes are performed

Test principle

The VetLyte Electrolyte Analyzer is a sophisticated medical device that utilizes Ion Sensitive Electrode (ISE) technology as a principle for precisely determining ion values. Although the technology itself is very complex, understanding how the device performs a sample analysis is very simple. Known for the calculation of the level of ions in the samples required. The sensitive membrane of the ion undergoes special interaction with the type of ions found in the sample, the membrane is the ion exchanger reacts with the electrical change of the ion and causes a change in membrane voltage or voltage measurement, which in turn accumulates in the thin layer between the sample Membrane.

That the measurement of the galvanic chain within the electrode determines the difference in the two possible values on both sides of the membrane and closes the Kelvank series during the sample on one side by the reference electrode source and the open end are the membranes, the internal ions and the inner polarity closes the other side. The ion between the internal membrane of the ions and the sample causes the production of an electrochemical potential on the active pole membrane. This potential energy is connected to the internal pole of the amplifier input. The source pole is connected to the ground as well as the secondary input of the amplifier. The ion concentration in the sample is determined by using the calibration curve determined by two points calculated from standard solutions with well-known ionic concentrations (two points of calibration), using the measured voltage of the sample and criterion A (point calibration).

Statistical analysis

The results were statistically analyzed by using the statistical program for social science 13 (SPSS 13) by finding (mean ± SD) and using the LSD (least significant difference) test. Two way ANOVA method was used to compare between results to identifying significant differences between patient and healthy people, and the results are significant if the value of P-value is less than 0.05 (P≤0.05) (10).

Results

The results of the statistical analysis showed a significant decrease (P<0.05) in the level of calcium Ca in serum for patients of both hemophilia A and Von Will brand compared to healthy patients. The results (Mean ±SD) for patients (9.363±0.365) (9.350±0.624) for hemophilia A and Von Will brand respectively compared to healthy (10.131±0.560), and for K potassium ions and sodium Na,

no significant differences were between hemophilia A and von Will brand compared to healthy patients. From the same table, there was no significant difference between hemophilia A and von Will brand for all studied mineral parameters (Ca, K and Na).

Table (3): The rate of metal concentrations for patients with hemophilia A and von Will brand compared with control

Patients Parameter	Hemophilia	Von Will brand	Control	LSD	P-Value
Ca Mg / dL	A 9.363 ± 0.365	A 9.350 ± 0.624	B 10.131 ± 0.560	0.279	0.008
S.K M \ L	A 4.4187 ± 0.5312	A 4.4000 ± 0.2896	A 4.4781 ± 0.5314	0.216	0.782
S. Na M \ L	A 141.28 ± 2.84	A 141.97 ± 5.53	A 145.38 ± 6.11	5.32	0.053

- ❖ Different capital letters show significant difference (p≤0.05) between patients and control.
- ❖ LSD: Least significant difference.
- ❖ S.Ca: Serum Calcium
- ❖ S.Na: Sodium Balance
- ❖ S.k: Potassium Balance

DISCUSSION

In the Table (1) indicates significant decrease in the concentration of calcium ions in patients of both hemophilia and Von Willebrand compared to healthy patients. This is due to the continuous blood transfusion of these patients, which leads to the binding of ionized calcium by the jackets found in the coagulation tubes used for this Purpose This reduction is associated with repeated transfusions of blood and blood vessels (11), And that the presence of calcium is necessary in the process of formation of fibrin, and this decrease in morale, which leads to the reduction of all activities of blood platelets and joint injury, and the continuous transfer of blood may be a rapid cellular hepatic cysts (anticoagulants) cause calcium deficiency and can be compensated by giving calcium to patients(12) As for potassium ions and sodium, the table indicates that there is no significant difference between hemophilia and von Willebrand patients compared to healthy ones. This is due to the fact that the hormone aldosterone which regulates these elements in the body is not affected by these diseases and its level remains normal in their bodies. As well as its function in regulating potassium and sodium ions concentrations (13).

CONCLUSION

The two diseases showed a significant effect on the low level of calcium in patients, which significantly affects blood clotting

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