

Successful Hemodialysis and Renal Transplantation in Combined Factors of V and VIII Deficiencies

Ali Naderi¹, Mohammadreza Ebadzadeh², Jalal Azmandyan³, Razieh Fayazfar⁴, Elham Ahmadi⁵, Ali Rikhtehgaran Tehrani⁶

¹Pediatric Hematology- Oncology Department, Kerman University of Medical Sciences, Kerman, Iran

²Urology Department, Kerman University of Medical Sciences, Kerman, Iran

³Nephrology, Kerman University of Medical Sciences, Kerman, Iran

⁴Hemophilia center of Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran

⁵Pediatric Ward, Kerman University of Medical Sciences, Kerman, Iran

⁶Researcher, Kerman University of Medical Sciences, Kerman, Iran

Corresponding Author: Dr. Ali Naderi, MD, Assistant Professor of Pediatric Hematology- Oncology Department of Pediatric, Kerman Medical Sciences University
Kerman, Iran
Tel.:
E- mail: dnaderih@ yahoo.com

Abstract:

Introduction: The prevalence of rare bleeding disorders, including combined factor V+VIII deficiency are higher in Iran than in developed countries. There are only a few reports which have been written concerning kidney transplantation in the patients suffering from these disorders.

Case report: A 22-year old girl, with a known case of combined factor V+VIII deficiency, a history of bladder stone surgery, postoperative bleeding and a need for hemodialysis due to renal failure was admitted for allograft kidney transplantation. The patient received fresh-frozen plasma and factor VIII, according to individualized protocol before, during and after the course of the transplantation. The function of the grafted kidney was very good nine months post-transplantation.

Discussion: Only heparin was used during hemodialysis. It has been shown that allograft kidney transplantation can be performed in rare bleeding disorders with good replacement therapy without any complications.

Key words: Rare Bleeding Disorders, Combined Factor V+VIII Deficiency, Kidney Transplantation

Received: 2, Aug., 2010

Accepted: 10, Oct., 2010

Introduction

There are limited researchs and guidelines in hemophilic patients, concerning optimal factor/heparin infusions during hemodialysis. Since bleeding disorders are considered to be a relative contra-indication, there are only a few reports which have been written on renal transplantation in patients with this kind of disease.

Heavy surgical interventions are possible in hemophilic patients, but depend on good replacement therapy during the peri and post operative period.(1,2,3)

In the following report, we discuss a successful hemodialysis and renal transplantation in a patient with combined factor V and VIII deficiency, which is an AR (Autosomal Recessive) bleeding disorder with an incidence of about 1 in 1 million. It

represents a distinct clinical entity from factor V deficiency and factor VIII deficiency.(4)

In Iran, the prevalence of rare bleeding disorders (RBDs), including factor I, II, V, VII, X, XI, XIII, V+VIII deficiencies are higher than in developed countries (Italy 5%, the UK 7% and Iran 15% of the total bleeding disorders are considered rare bleeding disorders).(5)

The frequency of factor V+VIII deficiency is 15% of rare bleeding disorders (third after factor VII deficiency and factor XIII deficiency) in Iran.(5)

A combined factor V and factor VIII deficiency is characterized by concomitantly low levels (usually between 5% and 20%) of the two coagulation factors FV and FVIII, both as coagulant activity and antigen.(6)

Clinical manifestations of a combined factor V and factor VIII deficiency in order of frequency are

Table1. replacement therapy schedule

	0-3days	4-8 days	9-15 days	16-20 days
FVIII	%100	%60-%80	%30	%20
FFP	10ml/kg/day	5 ml/kg/day	5 ml/kg/QOD	5 ml/kg/two times per week

nose bleeding (77%), the bleeding of the uterus (58%), oral cavity bleeding (51%), bleeding of the joints (25%), cord bleeding (22%), GI tract bleeding (7%), bleeding of the muscles (7%) and CNS bleeding (4%).(5,4)

Case Report

A 22- year old girl was admitted to the renal transplantation Ward of the Afzalipoor Medical Center (at Kerman university of Medical Sciences) with renal failure. This renal failure was due to multiple renal and bladder stones as well as a history of bladder surgery 7 years before with prolonged, heavy bleeding.

After surgery for bladder stones, tests of the coagulation system revealed activity of factor VIII 13%, and factor V 10%.

Prothromin time (PT) was prolonged to 16.5 seconds (the normal range is 11"-13"). Partial thromboplastin time (PTT) was prolonged to 58 seconds (the normal 35"- 40"). Other coagulation parameters were within normal limits.

On admission, the patient's vital signs were normal. Urine analysis showed many white blood cells within a high- power field, many bacteria, one- plus proteinuria, one- plus blood, a specific gravity of 1.- 030 and positive culture ($>10^5$ cfu/ml) for hemolytic streptococci.

Serum chemistry analysis showed elevated creatinine (4.5 mg/dl), triglyceride and cholestrol with other normal parameters.

Ultrasonography revealed small sized kidneys with increased echogenicity and bilateral hydronephrosis. Other organs in the abdomen were normal.

The patient had been hemodialysed via an internal arteriovenous fistula without any replacement therapy (factor VIII or fresh- frozen plasma) 5 months before this admission.

She received a matched allogenic kidney graft from a live, unrelated donor. Before transplantation, the level of F V was 10% and F VIII was 13% without any inhibitors.

The level of FV (with fresh- frozen plasma) and factor VIII (with plasma derived factor VIII) maintained 100% on the day of surgery and 3 days after, then, gradually, replacement therapy was tapered and eventually stopped three weeks after transplantation (Table- 1).

We transfused 5 units of isogroup platelets a few hours before transplantation.

The patient was discharged 7 days postoperatively with good renal graft function. The immunosuppressive medications (Prednisolone, Mycophenolate Mofetil and Cyclosporine) prescribed for her.

The function of the graft was very good without any episode of rejection or bleeding and without replacement therapy nine months post-transplantation.

Discussion

Limited research exists to identify the "optimal factor/heparin" infusions for dialysis in hemophilic patients. Most centers in severe form of factor deficiencies use a combination of heparin and factor replacement before and after dialysis to prevent clot formation in the extracorporeal circulation as well as to minimize bleeding.(7)

Because our patient had a mild factor deficiency, we used heparin only during hemodialysis without any episode of bleeding or clot complication.

We transfuse platelet before transplantation because the addition of platelets may aid in hemostasis by providing another source of factor V that localizes at the site of bleeding(4) and improves platelet function in an uremic patient. The patient's bleeding time was normal, but this test is notoriously difficult to interpret because of non-standard operator techniques and inter patient variability. We decided to transfuse platelets despite the risk of alloimmunisation.(8,9)

We conclude that hemodialysis and heavy surgical interventions are possible without any complications in patients with rare bleeding disorders, but with good replacement therapy during the peri and post operative period.

References:

1. Koene RA, Gerlag PG, Jansen JL, et al. Successful Haemodialysis and Renal Transplantation in a Patient with Haemophilia A. *Proc Eur Dial Transplant Assoc* 1977; 14: 401- 6.
2. Gomperts ED, Malekzadeh MH, Fine RN. Dialysis and Renal Transplant in Hemophiliac. *Thromb Haemost* 1981, 46 (3): 626- 8.
3. El Bakkouri J, Mamdouh A, Faez S, et al. Kidney Transplantation in Patient with Haemophilia A. *Transfuse Clin Biol* 2009; 16 (5-6): 471- 3

4. Peyvandi F, Spreafico M. Factor V and Combined Factor V and VIII Deficiencies in Textbook of Hemophilia; Blackwell Publishing, 2005; 306-11.
5. Editorial Board of Health and Medical Education Ministry. Rare Bleeding Disorders in Comprehensive Management of hemophilia in Iran. 2008; 80-6.
6. Giddings JC, Seligsohn U, Bloom AL. Immunological Studies in Combined Factor V and Factor VIII Deficiency. Br J Haematol 1977; 37: 257-64.
7. Lambing A, Kuriakose P, Lanzon J. Dialysis in the Haemophilia Patient: a Practical Approach to Care. Haemophilia 2009; 15: 33-42.
8. Brophy DF, Marith EJ, Carr SL et al. The Effect of Uremia on Platelet Contractile Force, Clot Elastic Modulus and Bleeding Time in Hemodialysis Patients. Thrombosis Research 2007; 119:723-729.
9. Ho SJ, Gemmell R, Brighton TA. Platelet Function Testing in Uremic Patients. Hematology 2008; 13(1): 49-58.