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DDAVP stopped active gingival bleeding and increased factor VIII level in moderate haemophilia A: A case report

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Abstract

DDAVP infusion was used as an initial treatment for a 3-year-old moderate haemophilia A boy with baseline FVIII: C level at 1.5%. With a single dose of 0.3 μg/kg of DDAVP in accompany with intravenous tranexamic acid, gingival bleeding was immediately stopped without further blood component or factor VIII concentrate administration. This observation supports DDAVP role to manage acute bleeding episode in moderate severity haemophilia A.

Key words: Moderate haemophilia A, DDAVP, Gingival bleeding

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รายงานผู้ป่วย: การให้ยา DDAVP ทางหลอดเลือดดำ เพื่อหยุดเลือดออกจากเหงือกและเพิ่มระดับแฟคเตอร์แปดในเลือดของผู้ป่วยเด็กโรคฮีโมฟีเลีย เอ ชนิดรุนแรงปานกลาง

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บทคัดย่อ

ผู้ป่วยเด็กชายไทยอายุ 3 ปี ซึ่งได้รับการวินิจฉัยด้วยโรคฮีโมฟีเลีย เอ ชนิดรุนแรงปานกลางมีอาการเลือดออกมากที่บริเวณเหงือกตามหลังภาวะเหงือกอักเสบ ได้รับการรักษาด้วยยา DDAVP ทางหลอดเลือดดำในขนาด 0.3 ไมโครกรัมต่อน้ำหนักตัวเป็นกิโลกรัมเพียงครั้งเดียว สามารถหยุดเลือดออกที่เหงือกได้ นอกจากนี้ยังตรวจพบว่าค่าการแข็งตัวของเลือด ได้แก่ APTT สั้นลงอย่างมาก และระดับของแฟคเตอร์แปดในเลือด (FVIII: C) เพิ่มขึ้นจากร้อยละ 1.5 เป็นร้อยละ 7.8 โดยไม่จำเป็นต้องได้รับแฟคเตอร์แปดชนิดเข้มข้นหรือส่วนประกอบของเลือดใดๆ ผลสำเร็จในการหยุดเลือดออกภายหลังการรักษาด้วยยา DDAVP แสดงให้เห็นว่า ยา DDAVP อาจเป็นอีกทางเลือกหนึ่งของการรักษาอาการเลือดออกจากเยื่อบุในผู้ป่วยโรคฮีโมฟีเลีย เอ ชนิดรุนแรงปานกลางได้

Case report

A 3-year-old Thai boy presented to the hospital with active gingival bleeding for 24 hours. His mother stated that an amount of fresh blood loss was in approximately one-hundred milliliters. Two days prior to admission, he complained of pain and swelling at the gingival. He was given oral amoxycillin by a local doctor for the treatment of acute gingivitis. His mother refused any history of traumatic injury at mouth and face but she recalled when this patient was 5-month-old he has had some bleeding through one side of his ear which rapidly stopped after external compression. He is the fourth child of the family which has no known hereditary bleeding disorder among other family members. From the physical examination, an active bleeding site was from the right upper molar gum. No bruisings, ecchymoses, petichial rashes, haemarthroses, nor joint deformities presented in otherwise examination. For the initial coagulation tests, platelet count was 236,000/ mL and APTT, PT, TT, bleeding time, and venous clotting time (VCT) were 55 sec (21.5-29.1 sec), 11 sec (9.5-13.5 sec), 13 sec (13-15 sec), 3 min (2.5-9 min), and 17 min (< 15 min), respectively. Factor VIII (FVIII: C) activity, factor IX (FIX),ristocetin cofactor activity (RisCof), and von Willebrand factor antigen (VWF: Ag) were 1.5 unit/mL, 61.1%, 61.3%, and 45%, subsequently. Local compression with gauze pack was performed at the molar. Meanwhile, tranexamic acid was administered intravenously at doses of 10 mg/kg every 6 hours. Intravenous desmopressin (DDAVP) was slowly given at the dose of 0.3 μg/kg to avoid the use of factor VIII concentrate or cryoprecipitate replacement therapy. The coagulation tests including APTT, FVIII: C, RisCof and VWF: Ag were repeated at 0, 15 min, 30 min, 1 hour, and 4 hours after DDAVP infusion.

After a dose of DDAVP infusion, the APTT value of 36.6 sec was achieved at 1 hour. FVIII: C, RisCof, and VWF: Ag were increased from 1.5 unit/mL, 61.3%, and 45% to 7.8 unit/mL, 136.4%, and 139.4% after 1 hour of DDAVP infusion, respectively (Table 1)

Bleeding was reduced gradually and completely ceased at 4 hours after DDAVP administration. Hemoglobin was stable at 11.3 g/dL without red cell, factor concentrate or blood component transfusion. During 2 days of admission, penicillin G sodium was administered intravenously at 50,000 unit/kg 6 hourly for gingivitis.

After the hospital discharge, this patient was continued with oral tranexamic acid. Likewise, penicillin G sodium was switched to liquid amoxycillin for the total of 7-days course of antibiotics. At his return to clinic in one week later, no bleeding was observed by dentist and his gingivitis was healed.

Table 1. Result of coagulation test before and after DDAVP infusion

Test	0 min	15 min	30 min	1 hr	4 hr
APTT (sec)	55.0	44.0	40.6	36.6	41.8
FVIII:C (unit/mL)	1.5	2.4	7.0	7.8	7.1
RisCof (%)	61.3	81.8	126.7	136.4	64.4
VWF:Ag (%)	45.0	52.3	93.0	139.4	99.7

Discussion

Desmopressin (1-deamino-8-D-arginine vasopressin or DDAVP) is a synthetic analogue of vasopressin which was initially used for the treatment of diabetes insipidus. Intravenous and nasal administration of DDAVP raise factor VIII (FVIII) and von Willebrand factor (VWF) in plasma owing to a release of these two factors from endothelial storage pool. DDAVP has been used successfully in the prevention and treatment of bleeding in mild haemophilia A and von Willebrand disease type I and II at the dose of 0.3 μg/kg intravenous infusion for at least 20 minutes[1-3]. DDAVP is efficacious as a haemostatic agent not only in haemophilia or von Willebrand disease, but also in patients with acquired platelet dysfunctions for example in uraemia and salicylate intake.

DDAVP has no proven benefit in patients with moderate or severe haemophilia A because of no specifically designed study to investigate the responsiveness in terms of FVIII increment and consistent response after repeated infusions. However, several published reports for DDAVP use in mild to moderate haemophilia A revealed a promising response to slow down bleedings[4-6].Rodeghiero F and co-workers have demonstrated that FVIII: C increase is sufficiently consistent in patients with mild or moderate haemophilia A after a DDAVP test-infusion[7]. However, higher FVIII: C baseline without an evidence of bleeding symptom in this reference cannot entirely support DDAVP role to stop a bleeding instance in moderate hemophiliacs.

Although, the response to increase FVIII and VWF level and to stop bleeding after DDAVP infusion is well-recognized, is also very important to perform a test-infusion as a guide for the future use of each individual patient. Moreover, factor VIII concentrate should be already prepared for an unsatisfactory response post DDAVP infusion. Nevertheless, the prospective study to evaluate DDAVP response together with the clinical relevance in other presentations of bleeding should be performed in moderate or severe haemophilia A.

Summary

Desmopressin (DDAVP) is commonly used to stop bleeding in only patients with mild haemophilia A and von Willebrand disease type I and II. Very little information supports DDAVP effectiveness in moderate and severehaemophilia A due to an insufficient increment of factor VIII (FVIII) and von Willebrand factor (VWF). This case report showed that intravenous DDAVP infusion was able to increase FVIII:C, RisCof, and VWF:Ag and to stop active gingival bleeding in a patient with haemophilia A in moderate severity .

It also suggests that DDAVP may be an alternative initial remedy for controlling of superficial bleeding such as active gingival bleeding in moderate haemophilia A instead of immediately giving factor VIII concentrate or blood component replacement therapy.

Rerferences

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