ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN — POLONIA
VOL. LVII, N 1, 20 SECTIO D 2002

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Desmopressin – a nontransfusional form of prevention of postextractive bleeding in some patients with von Willebrand's type I disease. Case report

Treatment of patients with bleeding problems can be accomplished if the dentist has an understanding of normal hemostatic mechanisms and the patient's specific coagulation defect. Patients with von Willebrand's disease have a normal platelet count, normal clotting time, normal serum fibrinogen and normal prothrombin time. Only the bleeding time is prolonged. This disease may be discovered after dental extractions. Some patients have also gingival bleeding: spontaneous or after brushing of the teeth. Therefore, before dental procedures are initiated, the patient should be asked about previous episodes of hemorrhage, that may have occurred after traumatic injuries, dental procedures, and surgical therapy, as well as episodes of epistaxis and menorrhagie. After anamnesis, evaluation, planning, and consultation with the patient's physician or hematologist we can make dental procedures in this patient group. Therapy for bleeding episodes after extraction are the best treated by transfusions of plasma and/or antihemophilic factor, cryoprecipitate and by local control of hemostasis. Now the use of desmopressin is recommended. It has been shown to reduce the need for replacement therapy in patients with von Willebrand's disease and mild hemophilia (1, 2, 4).

Desmopressin (Deamino-D-Arginine Vasopressin, DDAVP) is a synthetic analog of the natural hypothalamic-hypophysical hormone, arginine vasopressin. The modification of polypeptide chain (desamination of 1-cysteine and substitution of 8-L-arginine by 8-D -arginine) increases antidiuretic potency of this hormone, slightly influences the activity of the smooth muscle, hence the avoidance of undesirable pressor side effects. Administration of desmopressin leads to a two- to fourfold increase in plasma of factor VIII coagulant activity (VIII:C), increases the level of von Willebrand factor – antigen (vWF:Ag) and releases the plasminogen activator (t-PA). Owing to these properties

DDAVP can successfully influence the correct efficiency of the coagulation in the following situations: a) disorders concerning primary hemostasis at the stage of thrombocyte adhesion, b) disorders concerning secondary hemostasis at the stage of the factor VIII activity.

Desmopressin can be used in patients with mild hemophilia A, von Willebrand's disease type I, congenital thrombocytes activity disorders with hemorrhagic diathesis, drug-induced thrombocytopathia, disorders bleeding during uraemia and cirrhosis of the liver, prolonged bleeding time of unknown etiology(7, 8, 9).

DDAVP is more often used intravenously in prophylaxis before planning surgical intervention, in hemostasis dysfunction and during menorrhagia. Desmopressin can also be used subcutaneously or intramuscularly as bleeding prophylaxis to soft tissues after trauma or operation. When the bleeding occurs at home, patient can use this preparation intranasally. Now DDAVP is successfully used in prophylaxis and treatment of the bleeding after teeth extraction and in a minor surgery in patients with above mentioned hemostasis disorders. The drug is often administered before operation or cyclically about 12-24 hours during a few days in a single dose 0.3-0.4 μg/kg of the weight. Maximum plasma concentration is reached after intravenous administering approximately 60 minutes and half life ranges between 3 and 4 hours. Plasma half life for VIII:C is about 8-12 hours and application of the next doses of desmopressin is properly about 12 hours. Further repetition of the dose may result in a reduced effect and we should remember about reduction of endogenic stores of agent VIII. Two days' break is enough for its regeneration. Replacement therapy for bleeding episodes may also involve fibrinolytic inhibitors like ε-aminocaproic acid (EACA) or tranexamic acid (AMCHA), which are administered intravenously or *per os*.

During application of desmopressin the following undesirable effects can appear: headache, nausea, stomach pain, water retention in organism, face reddening, tachycardia, convulsions (3, 5).

At the Department and Clinic of Dental and Maxillofacial Surgery desmopressin has been used for a few years. Our medical experiences concern patients with von Willebrand's disease type I or mild haemophilia, after teeth extraction or minor surgical procedures within facial skeleton. For confirming of affective desmopressin activity we present a case of a patient who was treated in our clinic.

CASE DESCRIPTION

A patient M. K., twenty years old, with von Willebrand's disease type I (VIII:C-29%, vWF: Ag-20%) was admitted to the Department and Clinic of Dental and Maxillofacial Surgery in Lublin in order to surgically remove retention teeth 28, 38, 48 and to do plasty of the deviation of the nasal septum. After carrying out routine examinations before general anesthesia and consultation with hematologist from Laboratory of Hemorrhagic Dia-

thesis in Blood-Donation Centre in Lublin, we are planning a surgical procedure with using DDAVP as a hemostatic protection. Two hours before operation the patient was administered 0.3 μg/kg of the body weight DDAVP (Minirin – FERRING) diluted in physiological saline and given as an intravenous infusion over 20 minutes. The patient was also given AMCA (Exacyl – POLFA Warszawa). After a lapse of an hour VIII:C and vWF:Ag concentration in plasma was determined (we obtained VIII:C-120%, vWF:Ag-80%). So the planned surgical procedures were performed, without any complications. In the evening, the same day, after a lapse of 12 hours we repeated plasma investigations of the examined agents (VIII:C – 76%, vWF:Ag – 80%) and after a lapse of 24 hours (VIII: C – 56%, vWF:Ag – 64%). On the basis of obtained results we decided to give Minirin once a day and estimate the level of VIII:C and vWF:Ag every time before administering of this drug. Therapy lasted five days. The patient in good general and local condition was discharged from hospital with recommended pharmacological oral therapy (EACA, Cyclonamine) and strict oral hygiene. One week after the operation the sutures were removed and the drugs were put away. During this time no bleedings occurred and healing was uncomplicated.

DISCUSSION

The presented case of desmopressin treatment of patients with hemostasis dysfunction confirmed the use of DDAVP in prophylaxis of postextraction and postsurgical bleedings. It has been shown to reduce the need for replacement therapy in patients with von Willebrand's disease type I and mild hemophilia. Minimizing the use of factor replacement therapy is advocated whenever possible to decrease the potential for contracting hepatitis B, hepatitis non-A/non-B, delta hepatitis or acquired immunodeficiency syndrome (AIDS), and CJD (Creutzfeldt-Jakob Disease). It also allows to avoid complications associated with the repeated infusion of cryoprecipitate and factor VIII concentrations including hypervolemia, hemolytic anemia, allergic reaction and factor VIII antibodies – inhibitors (6, 10).

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2001.07.15

SUMMARY

In this article the possibility of using the Minirin (desmopressin) in maxillofacical surgery in person with hemostatic disorders has been described. The our case of patient with von Willebrand's disease type I indicates that this drug is very effective in bleeding after teeth extractions.

Dezmopresyna – nietransfuzyjna metoda zapobiegania krwawieniom poekstrakcyjnym u osób z chorobą von Willebranda typu I. Opis przypadku

W pracy przedstawiono możliwości zastosowania preparatu Minirin (dezmopresyny) w chirurgii szczękowo-twarzowej u osób ze skazami krwotocznymi. Przypadek własny pacjenta z chorobą von Willebranda typu I potwierdza skuteczność leku w przypadku krwawień poekstrakcyjnych.