

SHORT REPORT

Administration of recombinant factor VIIa for the management of massive bleeding due to uterine atonia in the post-placental period

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Hemorrhagic complications associated with uterine atonia in the early postpartum period frequently represent a life-threatening clinical situation. They may lead to massive loss of blood and plasma with consequent hemorrhagic shock and severe impairment of blood coagulation (1). The complication occurs in about 2% of all deliveries (2). In some patients, the routine management protocol is clinically ineffective.

The present article reports our results from the application of NovoSeven in puerperal patients with severe bleeding associated with uterine atonia in the post-placental period.

Patients and methods

Recombinant factor VIIa (rFVIIa) was administered in four cases of severe hemorrhagic syndrome due to uterine atonia in the post-placental period at the Clinic of Obstetrics and Gynecology at the University Hospital of Pleven, Bulgaria. Labor proceeded as normal deliveries (i.e. per *vias naturales*). After delivery, uterine atonia was present, and the usually performed activities such as the administration of uterus-tonics, i.e. oxytocin, methylergobrevine, and prostaglandin E₂, manual and instrumental uterine revision, hemo- and plasma transfusions, and uterus and vagina tamponade, were not effective.

Results

We present our findings in every case.

Case 1

The patient was admitted to the clinic at the early active labor phase. Following forceps extraction, necessitated by dynamic dystonia in the second labor phase, a mature fetus was delivered with an Apgar score of 8–10. The placenta was completely detached and emerged whole. The uterus failed to contract. A blood loss of about 850 ml in the course of 40 min was recorded. The actions undertaken were ineffective. The tamponade leaked out in 10 min and clinical evidence of hemorrhagic shock appeared. The total amount of blood loss was 1600 ml. NovoSeven, in a dose of 4.8 mg (82 µg/kg body weight), was administered as an intravenous bolus injection, and 15 min following the application, the bleeding through the tamponade stopped.

Case 2

Atonic uterus was palpated 70 min following delivery. A blood loss of 1500 ml was recorded. Manual and instrumental revision of the uterine cavity was carried out along with the administration of uterotonic medication oxytocin, methylergobrevine, and prostaglandin E₂, infusion of salt solutions, and concentrated blood and plasma. No improvement in uterine tone

and in hemostasis occurred. The vaginal uterine tamponade leaked through in 15 min. The clinical signs of a hemorrhagic shock aggravated, and the total blood loss reached 2400 ml. NovoSeven in a dose of 4.8 mg (73 µg/kg body weight) as an intravenous bolus was applied. The bleeding through the tamponade decreased and ceased completely in 25 min

Case 3

After delivery, the uterus failed to contract. The routine treatment measures remained ineffective. The lack of efficacy necessitated vaginal uterine tamponade to be applied, but it gave in within 10 min. A total blood loss of 1100 ml was found. Because of the worsening clinical symptoms of hemorrhagic shock and persisting bleeding, 4.8 mg (61 µg/kg) of NovoSeven was injected as an intravenous bolus. The bleeding was reduced and completely stopped in 35 min

Case 4

The patient arrived for the delivery of her second child. She complained of varicose veins of the lower limbs. Due to secondary labor insufficiency, delivery was augmented by an oxytocin infusion. The delivery was completed normally. A mature fetus with an Apgar score of 8–10 was born. The placenta detached and was visibly whole. The uterus did not contract despite of the uterotonic agents given. Instrumental revision was performed, yielding a small sized placental particle. Nevertheless, the uterus failed to contract. The clinical manifestations of a hemorrhagic shock developed. The total blood loss was estimated at 2500 ml. The lack of effect from the uterine vaginal tamponade placed necessitated the administration of 4.8 mg (72 µg/kg body weight) of NovoSeven, applied as intravenous bolus injection. The bleeding decreased and stopped completely in 40 min

Discussion

Despite the application of the routine measures, in some cases the uterus fails to contract and bleeding persists. In the cases described above, uterine atonia according to the Goeretzlehner scale (3) was of second grade (case 3) and of third grade (cases 1, 2, and 4). Currently, available data from ongoing studies suggested rFVIIa to be a rapidly acting, an effective agent in severe and life-threatening hemorrhages (4,5). These

findings have been confirmed by our own experience with the above described cases. Major decremental changes were observed in the red blood cell parameters. A decrease in prothrombin time (PTT) values was also manifested, while activated partial thromboplastine time (APTT) remained within the normal range. The administered mean dose of 72 µg/kg, given in an intravenous bolus injection, was effective in all the cases.

No thrombotic complications occurred, even in the case 4 who was at a higher risk, due to the existing varicose veins of the lower limbs. Administration of rFVIIa is indicated only when the routine measure fail to be effective. Choosing the optimal time point for the application of the agent requires rigid assessment of the condition of the puerperal patient. Priority in importance of criteria should be given to the haemoglobin, Platelet count values, and especially to the PPT readings.

Conclusions

In our opinion, the use of rFVIIa in puerperal patients with uterine atonia in the post-placental period is effective and sufficiently safe. In this respect, the medication is an alternative to the extreme surgical resolutions. Administration of NovoSeven, for strictly identified indications, preserves the female reproductivity leads to clinical improvement and reduces the amount of blood and blood product infusions required.

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