Case Report

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Intra-operative Anaphylaxis Due to Gelofusine in A Patient Undergoing Emergency Cesarean Section

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Abstract

Background: Anaphylaxis due to a colloid plasma expander can occur peri-operatively even though it is uncommon. *Case Presentation:* This the case report of an intra-operative anaphylaxis due to gelofusine in a 31 year old Caucasian female who underwent emergency lower segment caesarean section. The patient was managed successfully and the procedure was completedly uneventfully. *Conclusion:* A high index of suspicion, immediate diagnosis and rapid institution of treatment are essential for a safe outcome of such incidents.

Keywords: Anaphylaxis; Gelofusine.

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Introduction

Colloid solutions are widely used during surgery and play an essential role in volume resuscitation of the severely hypovolemic patient.[1] They expand the intravascular volume and help reduce the requirement of blood transfusions. They also provide time for full blood cross-matching to be carried out. Anaphylactoid reaction to Gelofusine, which contains succinylated gelatine and other plasma expanders have an estimated incidence of 0.07–0.15%.[1,2] However, this can be life-threatening if not promptly diagnosed and treated accordingly.

These reactions are usually of Type 1, IgE-mediated which cause the production of antibodies through prior sensitization, whereas in many cases they may occur without any previous documented exposure. The reactions are referred anaphylactoid when there is no prior exposure for the production of the antibody-antigen reaction of true anaphylaxis.[1,3]

Case Report

A 31-year old Caucasian female patient G2P1L1 came to the obstetric department with chief complaints of pain in the lower abdomen for *two days* and is perceiving active fetal movements. A complete general and physical examination done, and no abnormalities were detected. Complete routine blood investigations were done, and radiological evaluation in the form of ultrasonography revealed Placenta Previa Type 2B posterior. After a complete evaluation of the patient, the obstetrics department has decided to perform Emergency lower segment cesarean section and informed the same to the department of anesthesia.

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Pre-anesthetic checkup done bedside, and the patient was shifted to operation theatre and connected to standard monitors and baseline vital parameters were noted. IV access secured with 18 gauge cannula and connected to IV fluids. Under strict aseptic conditions a subarachnoid block at a lumbar spine level of L3-L4 with 25 gauge Quincke's needle and *2 ml* (*10 mg*) of 0.5% hyperbaric Bupivacaine. Adequate analgesia was achieved to a level of T6.

Surgeons initiated the procedure within a few minutes a single live male child was delivered with a birth weight of *3.2 kg* and APGAR score between 8 and 9. in view of postpartum hemorrhage along with hypovolemia and hypotension; intravenous gelofusine was started as a prophylactic measure. Within a *few minutes* after starting the infusion patient complained of dyspnea and severe itching. There was swelling of lips and severe facial edema. Dyspnea was progressing in intensity. There was a sudden fall of blood pressure, and immediately, the infusion was stopped. The patient has been given ventilatory assist with bag and mask ventilation. Hypotension was corrected with repeated doses of vasopressor agents like mephentermine and phenylephrine. A total of *200 mg* of Inj Hydrocortisone 300 micrograms of Inj Adrenaline was given. Nebulizations with Adrenaline, ipratropium bromide, salbutamol, budesonide were given. The placenta was delivered entirely, and the remaining intra-operative course was uneventful. The Patient was shifted to the post-operative ward for further care and management.

Discussion

Colloids or plasma expanders play an essential role in volume resuscitationduring the peri-operative period. However, there is debate regarding the relative merits of colloid *vs* crystalloid solutions as colloids can induce an anaphylactoid reaction which could potentially be life-threatening if left untreated.[4]

Such reactions often occur within a *few minutes* of starting the infusion. Therefore, early and frequent monitoring is needed,[1] the reactions have been graded in severity on a scale of 1–5 and tend to be under-reported.

Not all the gelatins share the same molecular structure, Haemaccel and plasma gel are urea linked, whilst Gelofusine is a succinate-linked gelatine. Hepner and Castells described that there is no significant cross-reactivity between various colloids, so a particular allergy to one should not prevent the use of another.[7] However, in the case of Haemaccel and Gelofusine, which differ only in their linkage to urea or succinate, their cross-reactivity has been documented by intradermal skin prick testing.[8] Therefore, any patient known to be allergic to one should be assumed as being allergic to others until proven otherwise.

There were case reports of anaphylactoid reactions to all of gelatine based colloids, with varying degrees of response severity. Often due to the administration of multiple drugs during anesthesia, it may be difficult to elucidate a single agent causing the anaphylactic response. In severe reactions, it is necessary to abandon the operative procedure until the patient has been stabilized and further investigations to be done to identify the cause.[5] Utmost care must be taken once there is a suspicion of allergy due to the possibility of a reaction to other gelatine based colloids or escalating anaphylactic response with further infusion.[6]

Diagnosis can be a challenge in most circumstances. Some of the features of anaphylactic response to an agent are similar to the effects of anesthesia itself. Most anesthetic agents cause vasodilation, hypotension, and potential cardiopulmonary dysfunction due to their direct and indirect effects on the cardiovascular system. This can pose difficulty in distinguishing one from the other. The standard diagnostic technique is skin prick testing. This may be supplemented by detection of specific IgE by radio immune assay.

Apostolou *et al*. stated that the use of *in vitro* Basophil Activation Test (BAT) as a safe and reliable assay test to Detect gelofusine sensitivity. This method utilizes detection of surface expression of lysosomal membrane glycoprotein CD63 on activated basophils.[9] The Leucocyte Histamine Release Test (LHR) which measures histamine release in response to gelatin solutions *in vitro* has been described but remained mostly as a research tool.[5]

Conclusion

Although colloids have a risk of anaphylactoid reaction, this is negligible when compared to other drugs like penicillin, which carries a risk of adverse reaction from 1–5%.[10] Colloids increase the intravascular volume and decrease the requirement for transfusion, but one must be cautious while using colloids. Extreme vigilance diagnosis should ensure prompt resuscitation in the event of anaphylaxis.

Consent: Informed consent obtained from the patient for publication of this case report.

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