Enterocutaneous fistula in a hemophilia B patient: case report

Sana Shahid[1], Hina Abdul Qayoom Khan[1*], Summaya Saeed[1], Jan Muhammad Agha[2], Khursheed A. Samo[1], Mujeeb ur Rehman Abbasi[1], Amjad Siraj Memon[1]

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ABSTRACT

Background: Hemophilia B is a rare entity than other coagulation disorders. It is an X-linked disorder characterized by a deficiency of functionally active coagulation factor IX (FIX), resulting in spontaneous or trauma-induced bleeding primarily in joints, muscles, and soft tissues.

Case Presentation: We report a case of a female who presented with a surgical problem. She had a history of massive transfusion many years back. She bled perioperatively and then we investigated her and luckily found the deficiency of FIX. She was managed and discharged home well.

Conclusion: Surgeons rarely comes across this rare coagulation disorder, so this was an intriguing case in view of the unusual presentation, initial diagnostic dilemma, and challenges in management.

Keywords: Enterocutaneous fistula, hemophilia B, coagulation disorder, factor IX, case report.

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Correspondence to: Hina Abdul Qayoom Khan
*Surgical Unit 3, Dow University of Health Sciences, Dr Ruth KM Pfau Civil Hospital Karachi, Karachi, Pakistan.
Email: hina.khan@duhs.edu.pk
Full list of author information is available at the end of the article.

Background

Hemophilia is an X-linked disorder due to factor IX (FIX) deficiency with a frequency of about 1:10,000 births. Females can harbor a defective gene in one of their X chromosomes and are then called "carriers." Hemophilia B is much less common than hemophilia A, and affects only 1:300,000 males born alive [1]. According to the Annual Global Survey 2018 of the World Federation of Hemophilia (WFH), the total population of Pakistan is 212,215,030, and the number of hemophilic patients is 1,982. Out of this, hemophilia A is present 1,678 and hemophilia B is present 304 patients [2].

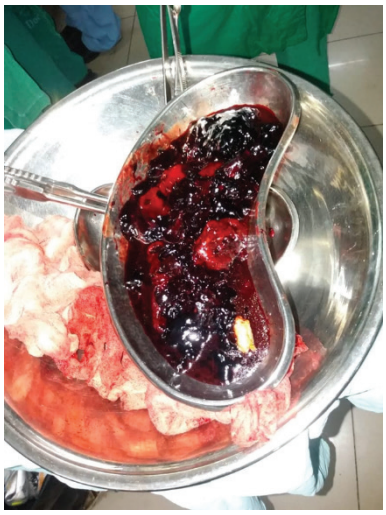
There is an increased risk of perioperative bleeding in patients with hemophilia B undergoing surgery [3]; therefore, multidisciplinary action is required for monitoring factor activity levels and administration of FIX.

Case Presentation

A 35-year-old female, resident of Baluchistan province, presented with a history of exploratory laparotomy and double barrel ileostomy, secondary to ruptured ovarian cyst and iatrogenic ileal perforation done 1 month ago. Postoperatively, she developed heavy, painless rectal bleeding with clots associated with a high-grade fever for the last 2 weeks and severe lower abdominal pain. The patient was referred to the emergency department for management. On presentation, she was tachycardic, hypotensive, and febrile. There was a midline laparotomy wound in the abdomen, slightly tender in lower abdomen with fullness, ileostomy seen on right to midline. Nine years ago, she had vaginal hysterectomy with massive blood transfusion [10 packed Red blood cells (RBCs), 20 fresh frozen plasmas (FFPs)], secondary to uncontrolled hemorrhage. Her two sisters expired due to a history of heavy bleeding during labor. Her investigations showed the following:

Hb	11 gm/dl
PT	10.9 seconds
INR	1.04

Ultrasound scan showed multiple pockets of collection with internal septations and echoes in Morrison' pouch, right paracolic gutter, and pelvis. Colonoscopy reported that the colon was full of blood, but the source could not be identified. We re-explored via midline scar and found 1 litre of blood clots with multiple interbowel pus pockets, a large purulent collection in right paracolic gutter, and a 0.5 cm perforation in sigmoid colon at mesenteric border, which was primarily repaired, and abdominal lavage done. Laparostomy was made with vacuum dressing.



Perioperatively, we transfused four packed cells volume and eight FFPS. Postoperatively, her hemoglobin dropped to 8 gm and for that multiple transfusions were carried out, but no cause was identified. Later on, she developed Entero cutaneous fistula (EC) in the midline wound, which was then managed conservatively. After a month, she was readmitted for EC fistula, urinary tract infection, electrolyte imbalance, and significant weight loss, i.e., 30 kg in 2 months. Her bleeding diathesis was investigated as we planned for re-exploration for early closure of EC fistula electively. Consultant hematologists were taken on board and we found the deficiency of FIX as her Activated Partial Thromboplastin Time (APTT) was deranged, i.e., 44 seconds, and FIX assay showed 9% factor level. We arranged recombinant FIX for continuous transfusion. The formula used to calculate the FIX dose for this patient was:

$$\text{Factors needed} = \text{weight of patient} \times \text{increment needed} / 2.2$$

The value attained was the total dose of FIX that was required every day after surgery. The total dose was given for a period of 5-6 days. After that, half of the total dose was administered for the next 5 days. FFPs were given after completion of the replacement therapy. Successful re-exploration done and small bowel fistula was resected and end-to-end anastomosis was done. She was healthy on regular follow-ups.

Discussion

The treatment of hemophilia B is to supply FIX to attain adequate clotting and facilitate the healing process. Recombinant factors are the mainstay products used in the replacement therapy. WFH guidelines [2] recommend that preoperative FIX levels should be in range of 50-80 IU/dl for minor surgeries and 60-80 IU/dl for major surgeries.

TYPE OF SURGERY	FIX LEVEL
Minor surgery	30-80 IU/dl for up to 5 days postoperatively
Major surgery	40-60 IU/dl for postoperative days 1-3 30-50 IU/dl for days 4-6 and 20-40 IU/dl for days 7-14

Recently, capillary electrophoresis has become the gold standard test for mutation analysis and carrier identification [4]. However, due to cost, the classic mode of carrier testing is linkage analysis in developing countries.

Surgery in these patients is very costly due to the use of clotting factor concentrates [5]; therefore, hospital stay is also prolonged as in our case. Long-acting recombinant factor IX (RFIX) is a better option due to limited transfusions and prolonged effect. Recombinant factor IX protein (RFIX-P) is an albumin fusion protein linking RFIX to recombinant human albumin via a cleavable linker. The half-life of RFIX-P is 102 hours, enabling dosing intervals of 7-14 days for prophylaxis and maintains the levels in the postoperative period [6].

Conclusion

Herein we describe the successful management of a rare case of hemophilia B with EC fistula. We conclude that GI surgery is feasible and safe in rare cases of hemophilia, provided appropriate precautions are taken.

What is new?

Surgeons rarely come across rare coagulation disorders, and so this was an intriguing case in view of the unusual presentation, initial diagnostic dilemma, and challenges in management.

Acknowledgment

We acknowledge the help of Dr Javeria (Consultant Hematologist), for the advice during the management of the patient.

List of Abbreviation

APTT	Activated Partial Thromboplastin Time
EC	Entero cutaneous fistula FFP Fresh frozen plasma
FIX	Factor IX
RBCs	Red blood cells
RFIX	Recombinant factor IX
RFIX-P	Recombinant factor IX Protein

Consent for publication

Written consent was obtained from the patient for publication.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Author details

Sana Shahid[1], Hina Abdul Qayoom Khan[1], Summaya Saeed[1], Jan Muhammad Agha[2], Khursheed A. Samo[1], Mujeeb ur Rehman Abbasi[1], Amjad Siraj Memon[1]

1. Surgical Unit 3, Dow University of Health Sciences, Dr Ruth KM Pfau Civil Hospital Karachi, Karachi, Pakistan
2. Surgical Unit 3, Dr Ruth KM Pfau Civil Hospital Karachi, Karachi, Pakistan

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Summary of the case

1	**Patient (gender, age)**	Female, 35 years old
2	**Final diagnosis**	Hemophilia B with associated diagnosis of enterocutaneous fistula
3	**Symptoms**	Abdominal pain, rectal bleeding, and high-grade fever
4	**Medications**	Symptomatic treatment
5	**Clinical procedure**	Primary repair of sigmoid perforation, laparostomy, closure of enterocutaneous fistula
6	**Specialty**	General surgery