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Case Report
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Thrombocytopenia after Splenectomy: A Case Report

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Abstract

Background: Thrombocytopenia is the most common hematologic complication associated with advanced liver disease. It has important clinical significance. There are many causes of thrombocytopenia. Abnormal distribution of platelets in spleen and decreased production of thrombopoietin are the main mechanisms. Splenectomy is an effective treatment for these patients. However, recurrent thrombocytopenia after splenectomy is very rare.

Case Summary: We report a case of a 59-year-old female patient. The patient had a history of autoimmune cirrhosis for more than 10 years. Splenectomy was performed for thrombocytopenia. But thrombocytopenia recurred about two weeks after splenectomy. After we ruled out the accessory spleen as a possible cause, the platelet count of the patient returned to normal after treatment with anti-infection, hormone, thrombopoietin and platelet transfusion.

Conclusion: For patients after splenectomy, we should be vigilant against recurrent thrombocytopenia caused by infection, accessory spleen, immunity, drugs and other related reasons.

Keywords: Splenectomy; Thrombocytopenia; Accessory spleen; Immune; Infection; Drugs

Introduction

As blood cells directly involved in clot formation and inflammatory regulation, thrombocytopenia is very common in clinical practice, especially in severe patients [1]. There are many reasons for thrombocytopenia, and since the important function of platelets is to stop bleeding, the primary complication of thrombocytopenia is bleeding tendency, so it is very necessary to identify the cause of thrombocytopenia as soon as possible and actively treat it [2]. At present, thrombocytopenia in patients with advanced cirrhosis is mainly believed to be caused by hypersplenism and splenomegaly, which caused by portal hypertension. For such patients, splenectomy is a very effective treatment [3-5]. However, recurrent thrombocytopenia after splenectomy is very rare. Here we report a case of recurrent thrombocytopenia after splenectomy.

Case Presentation

Chief complaints

A 59-year-old female patient was hospitalized for 4 days with fever, petechia and nosebleed.

History of present illness

The patient began to develop fever without a clear because 4 days ago, the highest temperature was 38.3°C. There is no cough, sputum or other discomfort during the onset. After self-administration of cephalosporins, the temperature subsided. Subsequently, the patient developed systemic petechia and nosebleed.

History of past illness

The patient had a history of decompensated autoimmune cirrhosis and had been treated in our hospital for a long time.

Due to hypersplenism and thrombocytopenia, splenectomy was performed under general anesthesia 17 days ago. Heparin was used for 3 days after the operation, and the patient was discharged 2 weeks later. The platelet count at discharge was within the normal range (293×10^9/L).

Personal and family history

The patient's family had no previous noteworthy medical history.

Physical examination

Acute face, listless spirit, petechia scattered all over the body, gingival and nasal bleeding.

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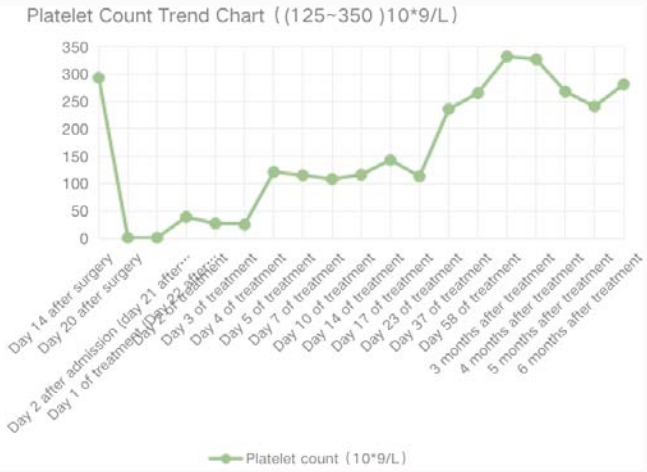

Figure 1: Platelet count trend chart (125~350) 10^9/L.

Laboratory examination

PLT: 1 × 10^9/L; Biochemical and hematologic test results such as tumor markers, electrolyte levels and liver function revealed no abnormalities.

Imaging examination

CT of head and chest showed no abnormality. Abdominal CT showed no evidence of accessory spleen formation.

Final diagnosis

Thrombocytopenia after splenectomy.

Treatment

Platelet 1U was intravenously transfused; Immunoglobulin was given intravenously for 5 days, 20 g per day; Recombinant human thrombopoietin injection was injected subcutaneously for 7 days, 1 ml per day; Methylprednisolone sodium succinate for injection was administered at 80 mg daily, adjusted to 60 mg after 3 days and 40 mg after 7 days, followed by oral preparation and gradually reduced dosage. Finally, methylprednisolone was maintained at 4 mg q.o.d for a long time.

Outcome and follow-up

After 3 days of treatment, the patient's platelet began to increase, and the whole body petechia, epistaxis and gingival bleeding disappeared 9 days later. After 13 days, the platelet count was in the normal range. Thereafter, platelet count fluctuated slightly and remained at (200~350) × 10^9/L during 6 months of follow-up (Figure 1).

Discussion

Spleen plays an important role in thrombocytopenia as the site of platelet destruction and autoantibody production. Splenectomy has been effective in the treatment of thrombocytopenia for a long time [6]. Thrombocytopenia is a common complication after splenectomy [7], and postoperative recurrent thrombocytopenia is rarely reported. There are three main causes of thrombocytopenia: Insufficient platelet formation, excessive platelet destruction and abnormal platelet distribution.

AlShammari et al. [8] reported that accessory spleen may be the cause of recurrent thrombocytopenia after splenectomy. For the generation of accessory spleen, it is generally recommended that surgical resection of accessory spleen after imaging diagnosis is the ideal treatment [9,10]. In view of this possibility, we improved the abdominal CT after admission to exclude the possibility of accessory spleen. Drugs, etc., reduce platelet production or destroy too much through immune mechanisms or toxic effects are also a possible reason. As a commonly used drug for preventing thrombosis after splenectomy, heparin is often required to be vigilant about causing thrombocytopenia [11]. Currently, antibiotic drugs reported to cause thrombocytopenia include vancomycin, rifampicin linezolid, etc. [12,13], but no cephalosporin drugs have been reported to cause thrombocytopenia. For drug-induced thrombocytopenia, it is difficult to complete or diagnose clinically due to the lack of detection reagents and the long detection time. The effective treatment for thrombocytopenia caused by suspected drugs is to stop the suspected drugs, after which the platelet count can begin to recover [12,14]. Platelets can be transfused in the case of severe bleeding, and others such as hormones, immunoglobulin and plasmapheresis can also be used when necessary [15]. In this case, the patient had been treated with heparin for 3 days after surgery and was discharged two week after surgery with a platelet count of 293 × 10^9/L. Fever occurred on the 3rd day after discharge, that is, the 17th day after surgery. After taking cephalosporin orally for once, fever was reduced, followed by petechia ecchymosis of the whole body (the 20th day after surgery). Platelet count decreased to 1 × 10^9/L on admission, and no change occurred in platelet count monitoring for 2 consecutive days. Fever may be a clinical manifestation of thrombocytopenia, and the patient developed fever on day 17 after discontinuing heparin, beyond the time window (5 to 14 days) [11], for thrombocytopenia due to heparin exposure. The patient developed systemic petechia ecchymosis on the 4th day after using cephalosporins, which cannot be ruled out as drug-induced thrombocytopenia. However, the patient did not have platelet recovery after discontinuing the suspected drugs, which is not consistent with the situation of drug-induced thrombocytopenia. In addition, since the patient had autoimmune cirrhosis, we cannot rule out thrombocytopenia due to immune factors. At present, there is no clear "gold standard" for the diagnosis of immune thrombocytopenia, which is mostly based on clinical diagnosis [16]. Bone marrow evaluation is not indicated unless patients have additional unexplained cytopenia, a significant family history of thrombocytopenia or myeloid malignancies, or poor response to typical initial treatment options (corticosteroids, IVIG, anti-D immune globulin) [17,18]. In this case, the platelet count was elevated after a combination of hormones, immunoglobulin, and thrombopoietin. Finally, by adjusting the dose of hormone, platelet can be maintained in the normal range for a long time. Therefore, immunity may be responsible for recurrent thrombocytopenia in this patient.

Conclusion

Recurrent thrombocytopenia after splenectomy is a rare condition in clinic, but we should still be vigilant against postoperative thrombocytopenia caused by infection, accessory spleen, immunity, drugs and other related reasons. It is necessary to treat the cause of thrombocytopenia and reduce the complications caused by thrombocytopenia.

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Author Contributions

Designed the study (Jilin Cheng and Yajun Zhang), drafted the manuscript (Yajun Zhang), data management (Jun Li, Zhenyu Fan and Cheng Tian). The authors are the team members. All authors have read and approved the final version of the manuscript.

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