

Idiopathic Thrombocytopenia After Omega Gastric Bypass Surgery: A Case Report

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Abstract

Introduction: After cessation of smoking, the best way to prevent health-threatening conditions is to treatment of obesity. Also, obesity treatment, cause alleviation or cure of other diseases. Bariatric surgery in selected obese patients is the best option for preventing health-threatening conditions. Despite the health benefits, this method of treatment -just like other surgical procedures- may be associated with various side effects.

Case Presentation: A 55-year-old female with BMI of 46.5 underwent laparoscopic Omega Gastric bypass surgery. She was admitted due to dyspnea and pulmonary embolism 14 days later. In conducted surveys, platelet count was less than 25,000. In multiple assessments, no cause found for the thrombocytopenia. Corticosteroids prescribed for her with the diagnosis of ITP; which fully responded to treatment.

Conclusions: Thrombocytopenia is a rare complication of gastric bypass surgery. Managements include rule out of other causes of thrombocytopenia and medical treatment.

Keywords: Morbid Obesity, Thrombocytopenia, Bariatric Surgery

1. Introduction

The obesity incidence rate is rising nowadays. It is estimated that obesity rates will reach to 51 percent of the population by the year of 2030. Which 42 percent of them will be moderately and 11 percent severely obese. These numbers represent a 30 percent increase in obesity, and a 130% increase in sever obesity rates by the year 2030 in comparison with current numbers (1).

Obesity is also associated with metabolic disorders, such as diabetes, Hyperlipidemia, cardiovascular disease and numerous other one. The obese patients have lower quality of life and life expectancy than people with normal weight. Also; obesity related comorbidities, have a high expenditure for patient and society (2).

In cases which the patient's BMI (body mass index) is higher than 40, or higher than 35 with at least one obesity related comorbidity, such as metabolic disorders, cardiovascular diseases, severe joint disease, and psychological problems; bariatric surgery has become the standard treatment. However, for Asian countries, the threshold BMI is lower by 2.5 (3).

Bariatric surgery, not only decrease the patient's

weight and maintain it in the normal limits, also these surgeries in obese patients with metabolic diseases, cause alleviation or complete remission and cure of this disorders, and save the patients from complications of metabolic diseases (4).

Omega gastric bypass was done first in 1995 and nowadays multiple clinical studies showed its efficacy and safety in reducing weight and obesity related comorbidities. The mechanism of this operation is a mixture of malabsorption due to bypass of at least 150 cm of proximal small bowel and restriction because of reduction of stomach size and reducing of food intake (5).

Despite great benefits, bariatric surgery may be associated with complications. Some complications have been known; such as risk of leaks from the anastomosis and stapler line, bleeding, deep vein thrombosis, pulmonary embolism, bowel obstruction and nutritional deficiencies (6). Also there are some rare side effects that was reported just in some cases that every bariatric surgeon most know about them. In this article we present a rare complication after bariatric surgery.

2. Case Presentation

The patient was a 55-year-old female with BMI of 46.6. She had a History of hyperlipidemia, fatty liver disease, and depression, hysterectomy for menorrhagia and mastoidectomy for otitis media 12 years ago. Also she had a history of deep vein thrombosis (DVT) limited to the below of the right knee after recent operation. But at the same time she has been consumed oral contraceptive pills (OCP) (OVUSTOP-H, IRAN, IRANHORMONE Company). She was also taking Propranolol 20 milligrams (mg) (PROPRANOLOL, IRAN, HAKIM Company), 25 mg of Nortriptyline (NORTRIPTYLINE, IRAN, AMIN Company), Fluoxetine 20 mg (FLUOXETINE, IRAN, PARSDAROU company) and 40 mg Atorvastatin (ATORVASTATIN, IRAN, ARYA company) daily.

In pre-operative studies, upper GI endoscopy was normal. She Had Grade 2 fatty liver, also there is no problems in heart examinations. Besides She had a slight increase in liver tests (AST = 64 and ALT = 55), and cholesterol was 380 and platelets count equaled 212,000, and other blood tests were all normal. After hospitalization, and pre-operative necessary procedure, including receiving Heparin (HEPARIN, IRAN, ALBORZDAROU Company), Antibiotics (CEFTRIAXONE, IRAN, LOGHMAN Company) and antacid (PANTOPRAZOLE, IRAN, FARABI Company) prophylaxis, laparoscopic, Omega bypass surgery was conducted. A Long narrow gastric Pouch was built Using Endo GIA Staplers, and then Loop gastrojejunostomy was done with Endo GIA staplers and reinforced with 2 - 0 Prolene at a distance of 200 cm from Treitz ligament. The operation time was 65 minutes and there were not any complications during surgery. Compression stockings and heparin (5,000 Units every 8 hours subcutaneously) continued after the operation. Two weeks after the surgery, while she was still receiving anti-coagulation prophylaxis, experienced shortness of breath and chest pain. She was admitted in the Intensive care unit (ICU) with the suspicion of pulmonary thromboembolism, and therapeutic dose of heparin was started. In admission tests, platelet count was 45,000. The Pulmonary thromboembolism was proven by CT angiography. Respiratory support such as intubation and mechanical ventilation, hemodynamic support with normal saline (to the purpose of urine output more than 0.5 cc/kg/hr) and Therapeutic dose of Heparin (5000 units IV bolus, then continuous infusion of 1300 units/hr) started for her. Abdominal Sonography and Doppler ultrasound of the lower extremities were normal. Other tests such as vitamin K levels also were normal. Peripheral blood smear was performed that did not exist Cellular fragmentation. In patient's medications checking, there were not any drug that cause drug-induced thrombocytopenia. Therefore, the diagnosis of Heparin-induced thrombocytopenia (HIT) was strength-

ened for the patient. But considering the negative HIT TEST; this diagnosis was ruled out. In hematology consultation, advised to start Dexamethasone (DEXAMETHASONE, IRAN, IRANHORMONE Company) 8 mg every 8 hours. Three days after starting Dexamethasone, the platelet count was reached to 280000, and was maintained in normal limits 72 hours after discontinuation of the treatment. **Figure 1** shows the platelet levels at the administration day (first day) and 5 days later. A week later, Patients general health fully recovered and was discharged with warfarin (APOWARFARIN, CANADA, APOTEX Company). After 6 months, patient breaks taking Warfarin.

Now, 3 months has passed of her operation, her weight Becomes 100 kg (BMI = 37). And platelets are at normal levels.

3. Discussion

Complications after bariatric surgery, can be divided into two types of short-term, such as leaks of the anastomosis, bleeding, and embolism and long-term, such as ulcers, obstruction, malabsorption of nutrients, vitamins and minerals (7). In addition, some rare side effects may also occur, which is necessary for all those who work in this field to be familiar with them and its causes and how to treat. Thrombocytopenia in adults, known as the platelet count less than 150,000, that is divided into mild (100,000 - 150,000 /microL), moderate (50,000 to 99,000 /microL) and severe (less than 50000 /microL) (8). In 5.2% of cases the platelet count may be less than 150,000 as a normal variant (8). In some cases, despite the drop in platelet counts, it maybe still be equal to or greater than 150,000. Therefore, the platelet count should be compared with the initial platelet counts, and recent platelet drop of more than 50% of the initial amount, needs to investigate (9).

The most common cause of thrombocytopenia following surgery are: hit, disseminated intravascular coagulation (dic), thrombotic thrombocytopenic purpura (TTP), dilution from fluid resuscitation or massive transfusion, Medications, bone marrow suppression due to sepsis or infection, alcohol consumption, nutrients such as folic acid or copper deficiencies, or can be idiopathic (10). Of the drugs, antibiotics like Sulfonamides, Ampicillin, Piperacillin, Vancomycin, Rifampin or Antiepileptic agents such as Carbamazepine, Phenytoin, and Quinine could be noted (11). If the patient has not already been taking these drugs, thrombocytopenia occurs in 1 to 2 weeks later, and after stopping, 5 - 7 days later becomes normal, and no more treatment is required (9, 12). Among the drugs used in this patient, none of them could cause a drop in platelets count.

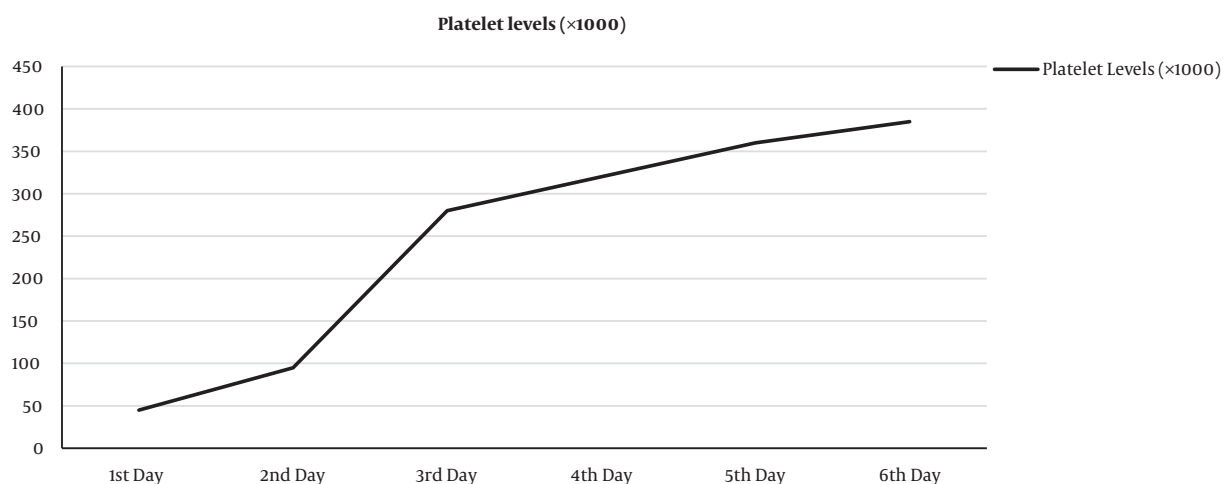


Figure 1. Platelet Levels at the Administration Day (First Day) and 5 Days Later

Folate, vitamin B12 and copper deficiencies, can cause a mild pancytopenia, but isolated thrombocytopenia has also been reported after bariatric surgery especially gastric bypass (13). In this patient, blood levels of vitamins and minerals checked, and was normal. Also there was no evidence of sepsis in this patient.

According to previous use of Heparin for her DVT and recent prescription of prophylactic Heparin; HIT and Non-immune Heparin-associated thrombocytopenia (HAT) was diagnosed at the first step.

Thrombocytopenia often occurs in the ICU-admitted patients. Although there may be various reasons, the use of heparin is considered as the cause of this phenomenon increasingly. Table 1 shows the differences between these two diseases (14).

HIT is an immunologic disorder, mediated by antibodies against heparin-platelet factor complex 4 (PF4). It is a rare cause of thrombocytopenia, and its incidence in patients who receive heparin, is 0.5-2 percent, and in patients who are hospitalized in the ICU is 39.0 - 48.0 percent (10).

HIT Diagnostic criteria's, briefly called Ts4, are: (14-16)

1. Platelets decrease after heparin therapy (Thrombocytopenia). Often platelet count drops about 50% or less, but in 10% of cases, there may be a drop in platelet count between 30 to 50% and usually doesn't reach under 20000/mcl unless when is accompanied with disseminated intravascular coagulation (DIC).

2. Thrombocytopenia may appear 5 - 14 days after initiation of heparin and if heparin had taken before, may presented sooner.

3. The incidence of thromboembolic complications while receiving heparin (thrombosis or another sequel).

Table 1. The Differences Between HIT and Non-Immune HAT Include

Variables	Non-Immune HAT	HIT
Onset	Within 4 days	Usually 5 - 14 (may be sooner) Typically 20 - 150k
Platelet count	Typically 100 - 150k	Median 50k Rarely < 20k Sometime falls > 30%,but remain > 150k
Complication	None	Thrombo-embolic lesions
Incidence	5% - 30%	1% at 1 week; 3% at 2 weeks
Recovery	1 - 3 days	5 - 7 days
Cause	Benign, small platelet aggregates	IgG-mediated strong platelet activation

4. Rule out Other causes, such as sepsis, etc.

The definite diagnosis is based on laboratory tests of antibodies against PF4-heparin complex detection. Immunoassay methods which done by most of the laboratories has low sensitivity while Platelet activation assay Methods is highly sensitive (negative predictive values, close to 100%) (14).

By discontinuation of the Heparin, recovery takes place at 4 to 14 days later. Direct thrombin Inhibitors such as Argatroban and Dabigatran should be used in these patients (14). Due to the unavailability of laboratory tests in many centers, the majority of physicians assume HIT as the cause of thrombocytopenia in patients who receive

Heparin. So, they discontinued the patient's Heparin; but, if there was another cause for it; the thrombocytopenia doesn't improve and deprived the patient of taking this effective drug. Specifically, the impact of alternative medications is not as well as Heparin. On the other hand, in patients with bypass surgery who have oral medication intolerance or malabsorption, intravenous Heparin administration is much more effective than oral alternative medications (17).

In this case, there is previously heparin intake, and recently she takes Heparin again for 2 weeks, probability of HIT was clinically high. However, according to confirmed pulmonary embolism, discontinuation of heparin injection, puts the patient in high risk of mortality. Therefore, due to the lack of serologic tests feasibility at the admitted hospital, blood samples for this test, was sent to another laboratory, and after negative results, this diagnosis was ruled out, and Heparin injections were not disconnected.

After bariatric surgery, the risk of DVT and pulmonary embolism (PE) is high. Because there are more risk factors. Such as BMI above 25 kg/m², intra-operative anti-Trendelenburg position, high gas pressure in the abdomen during laparoscopic surgery, and reduced fibrinolysis activity. Despite receiving Heparin in these patients, the incidence of clot formation in the lower extremities, is 0.79 percent (18). The risk of clot formation will be remain up to 30 days after surgery (19). If you suspect DVT or PE, therapeutic dose of Heparin should be started.

Idiopathic Thrombocytopenic Purpura (ITP) is an autoimmune disease that was first described in 1916 and is due to production of autoantibodies against platelets. Its incidence is 9.3 cases per 100,000 per year. However, the causes of the former cases is unknown, But the latter, can result from other autoimmune disorders, infections, vaccinations, lymphoproliferative disorders, congenital immune deficiencies, and medications (20).

ITP diagnosed by thrombocytopenia below 100,000, and the absence of splenomegaly and secondary causes. The standard treatment is Corticosteroid (8, 9). Assistive prescription of intravenous immunoglobulin, sometimes is necessary. 80 to 90 percent of patients, response to this treatment. In refractory cases, other treatments such as Splenectomy or prescription of Rituximab or Romiplostim can be used (15).

3.1. Conclusion

ITP is a rare complication of Laparoscopic omega gastric bypass, and responds well to corticosteroids. Although this patient had a previous history of DVT and heparin use; but laboratory data ruled out HIT. The diagnosis of ITP comes up for this patient after all other causes of thrombocytopenia ruled out. On the other hand; concurrent

increase in platelet levels and corticosteroid prescription; helped to confirm the diagnosis. So because of the short timing interval (2 weeks) of happening this condition after bariatric surgery; it strongly comes to mind to be related with the operation or even be one of its complications. But; it also needs more study on similar cases in future to assess all neglected aspects of the condition. So; thrombocytopenia in patients receiving Heparin needs a complete workup and before discontinuation of Heparin, HIT must be ruled out in high risk patients.

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Footnotes

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Ethical Consideration: An academic hematologist consultation used for treating the patient and set these papers. Informed consent was taken from the patient for publishing this case report.

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