SHORT REPORT

Better outcome of splenectomy in younger patients suffering from chronic immune thrombocytopenia (ITP)

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Abstract

Immune thrombocytopenia purpura (ITP) may need splenectomy after failure of medical treatment. The aim of this study was to explore the outcome of splenectomy in chronic ITP and to point out factors which can predict better response to splenectomy. This retrospective chart review was conducted at the Aga Khan University Hospital, Karachi, and comprised adult patients who underwent splenectomy for ITP from October 2005 to December 2015. Of the 51 patients, 37(72.5%) were females and 14(27.5%) were males. The overall median age was 32 years (interquartile range: 18-65 years). Complete response was seen in 43(84.3%) patients, 2(4%) had response and 6(11.7%) had no response. Relapse rate of ITP at 1 year was 4(8.8%). Multivariate analysis showed that failure rate of splenectomy in the 41(80.4%) patients aged <50 years was 3(7%) as opposed to 3(30%) in the 10(19.6%) patients aged >50 years (p=0.04). Splenectomy was found to be a safe and effective option for treatment of ITP. Young age at the time of surgery was associated with good response to surgery.

Keywords: Idiopathic thrombocytopenic purpura, Splenectomy, Response, Platelet.

Introduction

Immune thrombocytopenia purpura (ITP), also known as idiopathic thrombocytopenia purpura, is a haematological disorder in which there is premature destruction of platelets. The disease is characterised by peripheral thrombocytopenia, normal spleen and the absence of other causes of decrease in platelets.[1] The disease can be categorised as acute ITP, defined as thrombocytopenia occurring for <6 months, and often occurs in children and young adults with no sex predilection and is usually resolved spontaneously, or chronic idiopathic ITP, which is more common in adults aged 20-40 years, lasting >6 months with more cases in female, and very uncommon spontaneous remission.[2]

The diagnosis of chronic ITP is usually a diagnosis of exclusion. Many patients experience either no symptoms or minimal bruising, whereas others experience severe bleeding, which may include gastrointestinal bleeding, extensive skin and mucosal haemorrhage, or intracranial haemorrhage. The management of chronic ITP starts from observation to corticosteroids-based therapy, use of immunosuppressant and thrombopoietin (TPO)-receptor agonist, and eventually splenectomy when medical management fails or is contraindicated. Although the precise mechanism of splenectomy in chronic ITP is still not known, it is believed that in ITP spleen is the site of autoantibodies production against platelets and eventually these antibodies-coated platelets are destroyed in the spleen. Hence, if the spleen is removed, platelets will remain able to survive in circulation. But platelets can also be removed from the liver or combination of liver and spleen, so splenectomy is not always successful. Much work is being done to see response of ITP to splenectomy before surgery[3] but to date there is no proven data in this regard.

The current study was planned to see the response of splenectomy in chronic ITP and to find out factors which can predict good response.

Methods and Results

This retrospective chart review was conducted at the Aga Khan University Hospital (AKUH), Karachi, Pakistan, and comprised patients having undergone splenectomy for ITP from October 2005 to December 2015. All patients were evaluated and diagnosed to have chronic ITP by a team of haematologists and after adequate medical treatment they were referred for splenectomy as a treatment option for ITP. All patients received immunisation before surgery or two weeks after splenectomy. For all patients, 1 mega unit of platelets was arranged. Half volume of mega unit was transfused before incision and half before clamping hilar vessels of spleen. Intra-operative nasogastric (NG) tube and left sub-diaphragmatic drain were placed in all patients. All patients were kept in high dependency unit for one day after surgery. NG tube was removed on the first post-operative day while the drain was removed before discharge if output remained <30ml/day. Aspirin was started if the platelet count was >1,000x10^9. Patients' platelets were checked post-operatively. To analyse

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Table-1: Outcomes of splenectomy.

Variable	Frequency
Mean length of hospital stay	6±4 days
Mortality	1(1.96%)
Complications	
Abdominal collection	2(3.92%)
Chest infection	4(7.8%)
Need for packed cell transfusion	8(15.6%)
Outcome	
Complete response	43(84.3%)
Partial response	2(4%)
No response	6(11.7%)
Relapse at 1 year	4 (8.8%)

Table-2: Multivariate Analysis for predictive factors for Response to Splenectomy.

Variables	Responders n=44	Non responders n=6	P value
Gender			
Male	11 (78.6%)	3 (21.4%)	
Female	33 (91.9%)	4 (8.1%)	0.18
Age			
<50 years	38 (92.6%)	3 (7.4%)	
>50 years	7 (70%)	3 (30%)	0.046
Timing of surgery			
<1 year	16 (80%)	4 (20%)	
>1 year	29 (93.5%)	2 (6.5%)	0.143
Preoperative platelets			
<25000	33 (84.7%)	6 (15.3%)	
>25000	12 (100%)	0 (0%)	0.148
Symptomatic	9 (100%)	0 (0%)	
Asymptomatic	36(85.8%)	6 (14.2%)	0.227
Prior Medical management			
No or single medical therapy	27(93.1%)	2(6.9%)	
Multimodal therapy	18 (82%)	4 (18%)	0.215

outcome platelet count on first follow-up visit was checked approximately 2 weeks after surgery to avoid any false increase in the count because of pre-operative transfusions. The patients' platelet count was checked at 1, 3, 6 and 12 months post-operatively. Response to splenectomy was categorised according to American Society of Haematology's guidelines of 2011[4] and grouped as 'complete response' if post-operative platelets count increased by more than $100x10^9$, 'partial' if platelets count remained between $30x10^9$ to $100x10^9$ and 'no response' if it remained less than $30x10^9$. Patients with complete and partial response were grouped as responders and the remainder as non-responders. Relapse was defined as a decrease in platelet count to less than 50×109/l[5] after showing initial response to splenectomy. A value of 50×109 was chosen because above this level most patients do not require any form of therapy. Data was analysed using SPSS 19.

Of the 51 patients, 14(27.5%) were males and 37(72.5%) were females. The overall median age at the time of splenectomy was 32 years (interquartile range: 18-65 years). Besides, 20(39.2%) patients underwent spleenectomy within one year of diagnosis while 31(60.8%) patients were aware of their diagnosis for more than one year. The mean platelets count before surgery was 21.7 x $109±20x10^9$. Of the total, 48(94.1%) patients had received medical treatment prior to surgery as first line of treatment and only 3(5.9%) patients directly underwent surgery. Of the former, 25(49%) patients received only steroids, whereas 23(45.1%) received steroids and immunosuppressants.

In addition, 22(43.1%) patients underwent open splenectomy, 22(43.1%) laparoscopies and 7(13.8%) required conversion from laparoscopic to an open procedure. The mean length of hospital stay was 6±4 days. Complete response was achieved in 43(84.3%) patients, whereas response was noticed in 2(3.9%) and no response in 6(11.7%) patients. Only 1(2%) patient expired because of post-operative sepsis. Complications among patients included intra-abdominal collection 2(3.9%), post-operative chest infection 4(7.8%) and post-operative haemorrhage requiring pack cells transfusion in 8(15.7%) patients. Moreover, 4(7.8%) patients showed relapse at overall follow-up of 1 year and were labelled as refractory to splenectomy. Normal size spleen was found on histopathology in all patients (Table-1).

Of all, 45(88.2%) patients were responders and 6(11.8%) were non-responders. Of the 41(80.4%) patients aged <50 years, 38(92.7%) were responders and 3(7.3%) were non-responders, whereas of the 10(19.6%) patients aged>50 years, 7(70%) were responders and 3(30%) were non-responders (p=0.046). Of the 39(76.5%) patients having pre-operative platelets count of <25,000, 33(84.6%) were responders and 6(15.4%) were not, whereas all of the 12(23.5%) patients who had platelets count of >25,000 were responders (p=0.148) (Table-2).

Conclusion

This retrospective study at a single institute showed a response rate of 84.3% to splenectomy and a mean increase in platelets in responders after 1 year was $242.8x10^9$ requiring no further treatment in these patients. Moreover, 8.8% patients had relapsed with an initial increase in platelets but after 6 months of surgery, it decreased to less than $50x10^9$. These patients required additional medical treatment. Besides, 11.7% patients had no response to splenectomy. These patients had no increase in platelets at all. A similar kind of study done in

six European haematology centres[6] showed overall response of 88%, a Italian study[7] reported a rate of 86%, whereas a study conducted in South Korea[8] showed a response rate of 73%. These results are quite comparable to our study which had overall response of 84.3%.

In our study, when the variables of responders and non-responders were compared, age below 50 years was statistically significant (p=0.04) for better response after splenectomy. This factor has been found persistently significant in literature in previous studies as well. A systematic review[9] in 2004 showed better outcome of splenectomy in younger age group of 32 to 51 years.

The current study was a retrospective audit with a small number of patients over 10 years showing that disease is not much prevalent in our part of world. Our study showed that the response rate to splenectomy in our population was better. The exact aetiology of this better response is not known, but it may be because of genetic or autoimmune factors which need to be looked at, as these may give us clue to improving treatment results in non-responders.

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