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Outcomes of splenectomy for idiopathic thrombocytopenic purpura in adults: a developing country perspective.

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ORIGINAL ARTICLE

Outcomes of Splenectomy for Idiopathic Thrombocytopenic Purpura in adults: A Developing Country Perspective

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Abstract

Objective: to determine the outcome of splenectomy done in adult patients of Idiopathic Thrombocytopenic Purpura over a period of 10 years and, secondarily, to determine the predictors of complete response to therapy.

Methods: The retrospective review comprised of adult patients over 14 years of age who underwent open or laparoscopic splenectomy for Idiopathic Thrombocytopenic Purpura at Aga Khan University Hospital, Karachi, from January 2000 to December 2010. Data was reviewed in January 2011 by a surgical resident. Outcome was the response to splenectomy as per new definition of response set by the American Society of Haematology 2011 evidence based practice guidelines for Idiopathic Thrombocytopenic Purpura. Assessment of response was done within 1 to 2 months of splenectomy and after withholding concomitant treatment. SPSS 17 was used for statistical analysis.

Results: A total of 27 patients were found eligible. Of them, 2(7.4%) were males and 25(92.6%) were females with an overall mean age at the time of splenectomy of 30.8±6.3 years (range: 15-55 years). Out of 27 cases, 23(85.18%) patients underwent open splenectomy, 3(11%) laparoscopic and 1(3.7%) had laparoscopic converted to open splenectomy. Complete response was achieved in 20(74.1%) patients, whereas 5(18.5%) had response and 2(7.4%) had no response. None of the predictors of response to splenectomy were found significant.

Conclusion: Response to splenectomy in adult Idiopathic Thrombocytopenic Purpura patients was comparable to reported rate in literature with relatively lower morbidity and mortality. Splenectomy is a safe treatment option especially in patients who succumb to adverse effects of medical therapy.

Keywords: Idiopathic Thrombocytopenic Purpura, Splenectomy, Response, Platelet, Predictors. (JPMA 64: 1240; 2014)

Introduction

Idiopathic Thrombocytopenic Purpura, or Immune Thrombocytopenia (ITP), as new guidelines suggest, is an acquired autoimmune disease characterised by platelet destruction, caused by anti-platelet auto antibodies.[1] Spleen is the main reticuloendothelial system where anti-platelet antibodies are produced and autoantibody-platelet complex is destroyed.[2-5]

Medical treatment is chosen as a first line or initial treatment for ITP, especially corticosteroids.[2,3,6] Splenectomy is performed for various haematological disorders and has been a well-recognised therapeutic modality since years.[7,8] The first reported splenectomy done for ITP was in 1916.[1,9] Splenectomy is opted in patients who do not respond to medical treatment or when the side-effects of medical therapy are unacceptable or in case of relapse.[2,5,6,10]

There can be some pre-operative parametres that are able to predict the response to splenectomy. They are not fully recognised in literature and hence the clinical value of any pre-operative characteristic is unknown.[2,5] Furthermore, laparoscopic splenectomy, first introduced by Delaitre and Maignein in 1991 has evolved over the years as standard procedure compared to open one.[10] Literature has shown its advantage over the open technique.[11,12]

Many patients succumb to adverse effects of medical therapy in order to have a sustained response, which increases burden on healthcare, cost of treatment and anxiety in patients and families. Splenectomy may be a safe alternative in such situations especially in developing countries like Pakistan. There is paucity of literature regarding outcomes of splenectomy done for ITP and the predictors of response from our country. Therefore, we report a retrospective study to determine the outcomes of splenectomy done in adult patients of ITP over a period of 10 years. Secondary objective was to determine the predictors of complete response to therapy.

Patients and Methods

The retrospective review comprised adult patients over 14 years of age who underwent open or laparoscopic splenectomy for ITP at Aga Khan University Hospital over 10 years from January 2000 to December 2010. The files were reviewed in January 2011 by a surgical resident.

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Initially files of patients who underwent splenectomy were retrieved through International Classification of Diseases (ICD) codes. Patients who underwent splenectomy due to trauma or other haematological disorders or diseases were excluded, so were the patients with incomplete or missing records.

To assess the response to splenectomy for ITP the new definition of response set by American Society of Haematology 2011 evidence-based practice guidelines for ITP(9) was used; complete response meant achieving post-splenectomy platelet counts of at least $100x10^9$/L without treatment; response meant achieving post-splenectomy platelet counts between $30x10^9$/L and $100x10^9$/L or at least doubling of the baseline count without treatment; and no response meant platelet counts $<30x10^9$ or less than doubling of baseline count.

Assessment of response was done within 1 to 2 months of splenectomy and after withholding concomitant treatment. The pre-splenectomy and post-splenectomy cell counts were selected as minimum value and maximum levels achieved, respectively, in order to assess the patients response. The predictors of response reviewed were age, gender, pre-operative platelet count, treatment regimen used before splenectomy, duration between diagnosis and splenectomy.

As a practice, all patients who underwent elective splenectomy received pneumococcal vaccine prior to surgery.

Statistical analysis was done on SPSS 17. Continuous variables were analysed as means with standard deviations and t-test was used. Categorical variables were analysed as frequencies and percentages and chi-square test was applied to see any association between predictors and response. A p-value of less than 0.05 was considered to be statistically significant.

Results

There were a total of 158 adult patients who underwent the procedure. Of them 48(3-.37%) patients were operated for different haematological disorders. Of the 48 cases, 27(56.25) operated for ITP were found eligible for review and analysis. From within the study population, 2(7.4%) were males and 25(92.6%) were females with an overall mean age at the time of splenectomy of 30.8±6.3 years (range: 15-55 years). Elective splenectomy was performed in 26(96.3%) patients, whereas 1(3.7%) patient presented in emergency. All patients had radiology done, either ultrasound or computed tomography (CT) scan abdomen (Table-1). All the patients had normal-sized spleen. No accessory spleen was seen at radiology. Of the total, 25(92.6%) patients had received medical treatment prior to surgery as first line of treatment. Out of these 25 patients, 22(88%) had steroids only, whereas 3(12%) had steroids and azathioprine.

Table-1: Showing demographic data of the patients.

Patient Characteristics	No. of cases and percentages
Gender	
Males	2 (7.4%)
Females	25 (92.6%)
BMI (kg/m^2)	
16.6-18.4	1(3.7%)
18.5-24.9	13(48.1%)
25-30	7(25.9%)
30.1-34.9	4(14.8%)
35-40	2(7.4%)
Mode of presentation	
Elective	26 (96.3%)
Emergency	01(3.7%)
Radiology	
Ultrasound	26 (96.3%)
CT abdomen	01 (3.7%)
Duration b/w diagnosis and splenectomy	
<1 year	16(59.3%)
1-5 years	9(33.3%)
6-10 years	2(7.4%)
Treatment regimen before splenectomy	
Steroids only	22(81.5%)
Steroids+Azathioprine	3(11.1%)
No treatment	2(7.4%)
Pre-operative platelet count (/L)	
01-05 x 10^9/L	8 (29.6%)
06-10 X10^9/L	6(22.2%)
11-20 X10^9/L	3(11.1%)
21-50 X10^9/L	5(18.5%)
51-100 X10^9/L	4(14.8%)
151-400 x10^9/L	1(3.7%)

Out of 27 cases, 23(85.2%) patients underwent open splenectomy, 3(11.11%) laparoscopic and 1(3.7%) had laparoscopic converted to open splenectomy. Most of the cases of splenectomy were done in less than 2 hours (n=19; 70.4%) and rest of the cases were done in 2-3 hours (n=8; 29.7%). Majority of patients (n=25; 92.6%) were discharged within 10 days. Only 1(3.7%) patient had post-operative complication, while 26(96.3) had uneventful post-operative course (Table-2).

Complete response was achieved in 20(74.1%) patients, whereas response was noticed in 5(18.5%) and no response in 2(7.4%). The association of predictors with response (complete or partial) was also worked out (Table-3). The only significant association was found with pre-splenectomy medical therapy received. Patients who

Table-2: Showing surgery related data and outcomes of patients.

Variable	No. of cases and percentages
Route of surgery	
Open	23 (84.4%)
Laparoscopic	2 (7.4%)
Hand assisted laparoscopic surgery	1 (3.7%)
Laparoscopic converted to open	1 (3.7%)
Duration of surgery (hours)	
1-2 hours	19 (70.4%)
2-3 hours	8 (29.6%)
Response	
Complete response	20 (74.1%)
Response	5 (18.5%)
No response	2 (7.4%)
Hospital stay(days)	
5-Jan	15 (45.6%)
10-Jun	10 (37%)
>10	2 (7.4%)
Post-operative complications	
None	26 (96.3%)
Atelectasis	1 (3.7%)

Table-3: Significance of factors predicting splenectomy response.

Predictors of response	Response			P value
	Complete (n=20)	Response (n=5)	No (n=2)	
Age				
Up to 40	17 (85%)	3 (60%)	1 (50%)	0.3
41 and above	3 (15%)	2(40%)	1 (50%)	
Gender				
Male	1 (5%)	1(20%)	0	0.476
Female	19 (95%)	4 (80%)	2 (100%)	
Pre-operative platelet count				
Up to 10	9 (45%)	3 (60%)	2 (100%)	0.306
11 and above	11 (55%)	2 (40%)	0	
Duration b/w diagnosis & splenectomy				
<1 year	11 (55%)	3 (60%)	2 (100%)	
1-5 years	7 (35%)	2 (40%)	0	0.723
6-10 years	2 (10%)	0	0	
Treatment Regimen				
Steroids only	18 (90%)	3 (60%)	1 (50%)	
Steroids+Azathioprine	1 (5%)	2 (40%)	0	0.029
No treatment	1 (5%)	0	1 (50%)	

were on steroids (with complete or partial response but suffered adverse effects) had significantly higher response.

Discussion

The retrospective review shows the results of splenectomy done for ITP at a tertiary care centre of a developing country, with 74.1% patients showing complete response and 18.5% with partial response. With the evolution of laparoscopic splenectomy, we have also undertaken a couple of successful laparoscopic procedures with encouraging results.

We found that females were more affected with ITP than males which are comparable to other data.[13] Splenectomy has been the second-line treatment and apparently curative for adult patients with ITP, who do not respond to medical therapy.[6] Corticosteroids and combination of corticosteroid plus azathioprine is the first-line treatment for ITP patients as we recorded in our study, however, as observed all the 25 patients receiving the medical therapy had to undergo splenectomy. Prior case series have reported a relapse of around two-third of patients in whom medical therapy failed.[13]

The expected immediate response given in literature is 70-85% postsplenectomy.[9] This study showed response in 92.6% patients, whereas 7.4% did not show response. None of the patients had relapse in their follow-up. Only one (3.7%) patient had atelectasis as post-operative complication, whereas 26 (96.3%) had uneventful recovery time. This is encouraging in comparison with the literature which reports the morbidity rate of up to 12.9%.[5] We did not encounter any patient having overwhelming post-splenectomy infection.

Studies are done over the past decade to establish prognostic predictors of response to splenectomy. Our study has shown that failure to response to steroids is a risk factor for failure of response to splenectomy, Previous studies have shown age and duration between diagnoses to splenectomy to be the positive prognostic parameters;[13] however, our study does not reveal such an association. This may be due to limited sample size and power of the study.

The study had its limitations. Being a retrospective study of ten years, it had data that was not basically documented for research purpose. Hence, there were some variations in parametres i.e. follow-up period, post-operative platelet surveillance etc. As per institutional policy, files of patients with no activity for five years are destroyed and only key documents are scanned, hence making them unsuitable for research purposes. Due to this reason, our sample size was small and inappropriate to determine associations of predicting factors. These limitations can be overcome by a prospective and/or multicentre study.

Conclusion

The response to splenectomy in adult ITP patients was comparable to reported rate in literature with relatively lower morbidity and mortality. Splenectomy is a safe

treatment option especially in patients who succumb to adverse effects of medical therapy.

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