An audit of splenectomies in a teaching hospital in North India. Are postsplenectomy guidelines being complied with?

M Deodhar, N Kakkar

**Aims:** Patients with an absent or dysfunctional spleen are at risk of infection by encapsulated and other bacteria. Overwhelming postsplenectomy infection (OPSI) causes most concern because it can result in significant mortality. A retrospective review of splenectomised patients in a tertiary care setting over an eight year period was carried out to determine whether current postsplenectomy guidelines were being followed.

**Methods:** The cases were identified from the medical records and pathology files and data such as the reason for splenectomy, the preventive measures taken regarding vaccination, and antibiotic prophylaxis, together with their documentation in the discharge notes were assessed.

**Results:** Fifty six patients were studied. Trauma, both blunt and penetrating, was the most common reason for splenectomy. Thirty six patients received pneumococcal vaccination, with 20 patients having no mention of vaccination in their case notes. The discharge notes of 50 patients mentioned their splenectomised status; however, documentation of vaccination details in the discharge summary was poor, with only three patients having the relevant information recorded. Documentation of the need for future vaccination and precautions required in the asplenic condition was also lacking. Nine patients had postsplenectomy complications, although there were no cases of OPSI.

**Conclusions:** Adherence to standard guidelines for the management of splenectomised patients was unsatisfactory. There is a need for an improvement of the vaccination rate and careful documentation of this important health risk in the discharge summaries. Maintenance of a splenectomy registry could aid in optimising the management of these patients.

**MATERIAL AND METHODS**

Our study was carried out in the departments of surgery and pathology, Christian Medical College and Hospital, Ludhiana, India, which is a 800 bed teaching institution.

A retrospective audit of all patients who underwent splenectomy for any indication, emergency or elective, over an eight year period from 1996 to 2003 was performed. The patients were identified by the International Classification of Diseases coding in the medical records section and the biopsy index in the pathology section. Their case notes were reviewed for the reason for splenectomy, associated injuries (in case of a traumatic aetiology), any postsplenectomy complications, and the follow up status. The preoperative and postoperative vaccination details and the documentation of splenectomy as a health risk in the discharge summaries were also recorded. Patients undergoing spleen conserving surgery, in addition to those who died during hospitalisation after the splenectomy, were excluded from our study.

**RESULTS AND ANALYSIS**

In the eight year study period, 56 patients underwent splenectomy in our hospital. These included 49 males and seven females (male to female ratio, 7 : 1), with an age range of 3–82 years (mean age, 33.5). Fifty one splenectomies were performed as emergency procedures for varying grades of splenic trauma, whereas elective surgery was performed in...
DISCUSSION

The asplenic state is a health risk increasingly being recognised by health professionals all over the world. Infection in patients with an absent or dysfunctional spleen remains largely preventable. Many measures have been proposed to reduce the risk of sepsis after splenectomy, which include chemoprophylaxis, immunoprophylaxis, and patient/clinician education.10

Other than the known susceptibility of splenectomised individuals to encapsulated bacteria (Streptococcus pneumoniae, N meningitides, and H influenzae),7 there is evidence to suggest that other organisms, such as Gram negative bacteria and Capnocytophaga canimorsus,7 in addition to intraerythrocytic parasites, such as babesia and plasmodium, can cause infections and carry considerable morbidity.8

The pneumococcal vaccine, first introduced in the 1970s, presently includes 23 serotypes responsible for approximately 88% of pneumococcal infections. However, the most virulent pneumococcal serotypes tend to be the least immunogenic, and there is clear evidence that vaccine efficacy is poorest in younger patients who, unfortunately, also comprise the highest risk group.9,10

Pneumococcal vaccine protection rates are 70% in a healthy immunocompetent host because approximately 10% of possible antibody responses to individual antigens do not occur.11 The British Committee for Standards in Haematology first published guidelines for the prevention and treatment of infection in asplenic and hypoplastic patients in 1996.12 The salient aspects of these guidelines are related to anti-infective prophylaxis, immunisation schedules, and treatment of confirmed or suspected infections. These guidelines have recently been updated with minor amendments. A newer recommendation has been to include the use of the meningococcal vaccine in previously non-immunised patients and a need to consider the use of the seven valent pneumococcal vaccine.13

However, vaccination should not result in a false sense of security because vaccine failures are frequent. There are relatively fewer studies previously carried out to determine the vaccination status and use of antibiotic prophylaxis in splenectomised subjects.

Brigden et al performed an audit on 164 hospitalised patients who underwent splenectomies in British Columbia, Canada.14 Sixty eight percent of patients had received pneumococcal vaccination. Of the 55 patients who underwent elective surgery, only 11 received preoperative vaccination. Most (95%) of the patients had documentation of their splenectomised status in their discharge summaries. However, documentation of the vaccination status, the need for future vaccination, and information on future infection risks was inadequate, with only 21%, 6%, and 5% of the discharge notes giving this information, respectively.

Ramachandra et al studied postsplenectomy prophylaxis status in 76 patients from a general hospital.15 Fifty five of the patients had received vaccination, whereas 48 were discharged on prophylactic antibiotics. Eighty one percent of the surviving patients in their study had adequate communication with the general practitioner regarding their splenectomised status. In their study, patients undergoing non-elective splenectomy were less likely to be vaccinated or to receive prophylactic antibiotics. In another study, among 28 patients who underwent splenectomy in a district hospital, trauma was the indication in only four patients. The remaining 24 patients either had haematological indications or had their spleen removed as part of other abdominal surgery. Most patients were prescribed pneumococcal vaccine (24) or prophylactic antibiotics (26).15
A study to evaluate postsplenectomy vaccine prophylaxis in Lothian, UK, revealed that 80.6% of the patients were vaccinated against S pneumoniae. The vaccination rates for H influenzae and N meningitidis were 65.9% and 48.2%, respectively. Three quarters of the splenectomised patients were prescribed longterm antibiotic prophylaxis.16

Ejstrud et al evaluated pneumococcal vaccine prophylaxis in 555 patients who underwent splenectomy over a 10 year period.17 Vaccination rates were 62%, with patients undergoing splenectomy during cancer surgery or after inadvertent intraoperative trauma particularly at risk of not receiving vaccination. Only 23% of the patients were vaccinated at the appropriate time, with the splenectomy status unrecorded in 10% of cases. Vaccination status was mentioned in 35% of the discharge notes, whereas only 2% mentioned the precautions to be taken for asplenic patients.

“Although 50 of the 53 discharge summaries issued mentioned the splenectomised status of patients, only three mentioned the vaccination status”

Waghorn18 studied data on 77 asplenic patients who developed OPSI by means of a questionnaire survey among microbiologists across the UK. Overall mortality with OPSI was 50%. Only 24 patients had received prophylactic pneumococcal vaccination before OPSI. There were seven cases of pneumococcal vaccine failure. Accepted guidelines were not being followed, with only a few patients being adequately advised on antibiotic prophylaxis or other measures. Most similar published studies in patients who have undergone splenectomy have shown that standard guidelines regarding vaccination and antibiotic prophylaxis are not followed strictly. Our study has also shown inadequacies in the adherence to currently accepted postsplenectomy management strategies. The overall vaccination rate in our study was 64.3%, which is comparable to most other reports. However, alarmingly, 20 of the 56 patients in our study did not receive vaccination. Most of the patients received the vaccination postoperatively, which is understandable, because most splenectomies were carried out as emergency procedures for splenic trauma. Although 50 of the 53 discharge summaries issued mentioned the splenectomised status of patients, only three mentioned the vaccination status. The need for future vaccination and antibiotic prophylaxis was also poorly documented. Documentation of extra caution to be taken by patients in the wake of any infections was poorly documented. Similarly, there was no record in the case notes to suggest that the patients were given a card and/or bracelet specifying their asplenic condition, information that could be vital for their general practitioner. Medical personnel dealing with asplenic patients need to be more vigilant in ensuring that prophylactic vaccination and antibiotic schedules are followed and in educating patients about their asplenic state. Maintenance of a hospital splenectomy registry can aid in keeping track of the health status of this potential risk group. A protocol sheet could be included in the case notes of the patient and the subsequent follow up should be documented on it. This should help to ensure compliance with regard to postsplenectomy guidelines (appendix 1).

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Take Home Messages

- Similar to other reports, we found that adherence to standard guidelines for the management of splenectomised patients was unsatisfactory
- The vaccination rate in these patients needs to be improved
- The discharge summaries of these patients should contain careful documentation of this important health risk
- Maintenance of a splenectomy registry could aid in optimising the management of these patients

REFERENCES
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