An audit of blood transfusion in resections for Crohn’s disease

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This study explores the potential saving from more appropriate blood-ordering in the surgical treatment of Crohn’s disease [1]. Napier and colleagues, after analysing surgical practice across a number of specialties, recently produced a maximum surgical blood order tariff according to the type of operation [2]. The introduction of rapid safe cross-matching of serum [3] (grouped, screened for antibodies and stored pre-operatively) allows the provision of blood with minimal delay when necessary [1]. We decided to compare cross-match requests in resections for Crohn’s disease in this hospital over a decade with those recommended in a recent guide to surgical care [4]. We also suggest a cross-matching tariff based on the number of units transfused in these resections.

Patients and methods

A sample of 100 resections for Crohn’s disease carried out between January 1975 and December 1985 in 94 patients was studied (age range 14–82 years). Four operation groups were analysed separately:

- Ileo-caecal and small bowel resection (n = 62);
- Hemicolectomy (n = 18);
- Total colectomy (n = 13);
- Proctectomy (with or without colectomy) (n = 7).

The following information was recorded: the pre- and post-operative haemoglobin, the number of units cross-matched and transfused, the year of operation and the sex of the patient. The results are summarised in Table 1. Statistical significance was taken as p<0.05.

Results

In total, 368 units were cross-matched, and 106 units were transfused in 48 cases (in 11 of which only one unit was given). The ratio of units cross-matched to transfused was 3.5:1. The maximum transfusion in any operation was four units. No transfusion was required in 52 of the operations (in 96 operations at least 2 units had been cross-matched). Of the cross-matched units, 262 were not used. A modest difference in haemoglobin values between the sexes was not significant (Mann-Whitney test). There was no significant difference between the mean pre- and post-operative haemoglobin (Wilcoxon test). There was

| Resection Group          | Ileocaecal | Hemicolectomy | Total colectomy | Proctectomy | Total  |
|--------------------------|------------|---------------|-----------------|-------------|--------|
| Number of operations     | 62         | 18            | 13              | 7           | 100    |
| Units cross-matched      | 215        | 64            | 56              | 33          | 368    |
| Units transfused         | 47         | 16            | 23              | 20          | 106    |
| Number of operations     | 38         | 10            | 4               | 0           | 52     |
| listed according to      | 2           | 2             | 1               | 0           | 11     |
| number of units          | 0: 8       | 5             | 3               | 2           | 9      |
| transfused               | 2: 11      | 0             | 4               | 2           | 9      |
|                           | 3: 3       | 0             | 4               | 2           | 9      |
|                           | 4: 2       | 1             | 1               | 2           | 6      |
| Mean units cross-matched | 3.5        | 3.6           | 4.3             | 4.7         | 3.7    |
| per operation            | 0.8        | 0.9           | 1.8             | 2.9         | 1.1    |
| Mean transfusion         | 12.7       | 13.0          | 11.8            | 12.6        |        |
| per operation (units)    | 12.3       | 12.4          | 12.0            | 11.9        |        |
| Mean haemoglobin         |            |               |                 |             |        |
| 1 day pre-op (g/dl)      |            |               |                 |             |        |
| Mean haemoglobin         |            |               |                 |             |        |
| 1 day post-op (g/dl)     |            |               |                 |             |        |

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Journal of the Royal College of Physicians of London Vol. 21 No. 3 July 1987
no obvious change in cross-matching patterns over the study period.

Discussion

Dunn and Rawlinson [4] recommended in surgery for Crohn’s disease that two units should be cross-matched for small bowel resections and six units for proctocolectomy. In our experience of transfusions for such operations, these figures are excessive.

In our sample, 71 per cent of units cross-matched for operation were not used. The mean cross-matched:transfusion ratio suggests over-ordering [5]. This was most marked in ileo-caecal resections, ratio 4:6, while proctectomy had a ratio of 1:7 and a mean of 2.8 units transfused. There was no significant difference between pre- and post-operative haemoglobin levels, indicating a satisfactory assessment of transfusion requirement. A review of the records of patients receiving single unit transfusions suggested that most were unnecessary. Junior medical staff are as yet unaware of the transfusion requirements obtained in this study (amounts transfused varied widely between groups while cross-match requests were similar). Caution inevitably results in excessive cross-matching.

Based on this study, we make the following suggestions for cross-matching:

Ileo-caecal resection – ‘group and save’

Hemicolectomy – ‘group and save’
Total colectomy – cross-match 2 units
Proctocolectomy – cross-match 4 units.

If this guide had been used in this group of 100 resections, 54 units would have been cross-matched pre-operatively (and 17 would have remained unused) while 58 units would have been cross-matched during 27 operations (excluding the 11 single unit transfusions). We suggest a ‘group and save’ policy should be considered where an audit reveals a mean transfusion of less than one unit per operation. This presupposes the availability of rapid safe cross-matching of serum (grouped and screened for antibodies) to allow the urgent provision of matched blood. With an adequately stocked blood bank and staff able to respond rapidly to requests from operating theatres, the tariff recommended above would be safe and efficient.

References
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The public’s health

The passing of its first health insurance act is an indication of when a country has committed itself to its people’s health. For the United Kingdom, the time can be taken from Lloyd George’s National Health Insurance Act of 1911. Doctors certainly played a part in identifying the need, despite Lloyd George finding them ‘unreasonable and unruly’ when it came to detailed negotiations. Social factors that damage health were officially recognised when, in 1903, the medical department of the army were so concerned with the poor physique of recruits that they asked for an investigation. An expert committee found that the recruits were drawn from the unemployed whose health was worse than others. Another expert body was set up to make recommendations. They itemised the environmental factors that contributed to disease, although a Dr Haig stoutly maintained that all the ills of man were due to an excess of uric acid. But, as a result of the committee’s work, the Education Act of 1907 set up the medical examination of school children and Acts were passed dealing with workmen’s compensation and pensions for the old.

The British Medical Association pointed out the need for a scheme to operate health services for low income groups, but Lloyd George looked to Germany for a model. Taking a holiday in Germany in 1908 to recuperate from a sore throat, he was ‘tremendously impressed with the finished character and perfection of the whole scheme’ of health care. It was Prince Otto von Bismarck, not usually known for the liberality of his policies, who had instigated the German scheme of health insurance as far back as 1884.

Lloyd George’s civil servants were asked to complete the detailed plan of his health insurance scheme in six months. They complained that ‘The German scheme was carried out with general goodwill; ours was to be launched amid a hurricane of abuse and hatred, with everyone doing everything possible to hinder and check its construction.’

Lloyd George forced his Act through parliament ‘with that combination of grim resolution and consummate adroitness and tactical skill which was his chief characteristic.’ The credit for the behind-the-scene detail must go to the principal civil servant involved. Not for nothing had Sir Robert Morant read theology at Oxford and been tutor to the King of Siam.

A nice tailpiece to this political furore was that the Act was opposed fiercely by those eminent socialists Sydney and Beatrice Webb on the grounds that disease was to be prevented, not treated.