INTRODUCTION

Shoulder arthroplasty is a highly successful procedure for degenerative and inflammatory glenohumeral arthritis. Perioperative blood loss is, however, common and at times, blood transfusion is required post-operatively, although in the majority of patients, this is a safe and effective solution; it is not without potential serious undesired side effects.\(^1\)

We report the management of a patient with anti-Vel antibodies, which are extremely rare, who underwent shoulder resurfacing without the need to involve several large transfusion services.

CASE REPORT

A 65-year-old right hand dominant patient with glenohumeral arthritis was listed for a right shoulder joint resurfacing arthroplasty (Figure 1). Pre-operative assessment revealed anti-Vel antibody in the blood sample with a haemoglobin level of 12.2 gm/dl. The serological characteristics made the transfusion of Vel positive blood impractical. The past surgical history revealed abdominal surgeries, where the patient received 2-3 units of packed cells on each admission. Advice from haematological services indicated that if blood was to be used, it would require the assistance of several transfusion services, thus an alternative plan was used to overcome this difficulty.

The patient was admitted 72 hours before surgery and oral iron therapy was started. On the day of surgery, the patient was bled 2 units in the anaesthetic room. Hartman’s infusion was started and a total of 2 litres were given pre-operatively so as to cause acute haemodilution. The surgical procedure was performed (Figure 2).

In the postoperative period, each unit of autologous blood was transfused over 2 hours period. The patient made an uneventful recovery and at 6 weeks had a haemoglobin level of 13.2 gm/dl. The cost of arranging one unit of Vel negative red cell is £500 - £1000, which may vary depending on the location and availability of the donor. On the other hand, the cost of this approach for one unit of blood was within £150.

DISCUSSION

Anti-Vel antibodies are extremely rare. The phenotype Vel has a frequency of 0.0002 in England.\(^2\) Anti-Vel is often complement-activating IgM antibodies that cause severe immediate haemolytic transfusion reaction. There are several reports describing haemolytic transfusion reactions in such patients following transfusion of Vel positive blood. The best practice in management of Vel negative patients, during major surgery, is autologous blood transfusion, as it is very difficult to obtain sufficient Vel negative red cell units in time.\(^3\) This case study deals with a Vel negative patient, who needed shoulder surgery and had an obvious risk of haemolytic transfusion reaction because of the scarcity of Vel negative blood so an evidence-based plan was designed.
The pre-arthroplasty donations, cell saver and post-operative collection and transfusion have decreased the need for allogenic blood.\textsuperscript{3,5} The autologous blood donation pre-operatively is costly for the institution. The price of a unit of autologous blood has been estimated at slightly more than 1.5 times the cost of the transfusion of an allogenic unit.\textsuperscript{6} The overall cost is even more, if the donated blood is not used, as it cannot be saved for use in other patients.

Haemodilution is well-tolerated by the patients, if not contraindicated, and it also reduces the risk of thromboembolism.\textsuperscript{7} Acute normovolaemic haemodilution is an effective blood conservation strategy when performed for major arthroplasty surgery.\textsuperscript{8} Autologous blood can get contaminated during storage and can cause morbidity and mortality.\textsuperscript{9} The patient was bled 2 units of blood in the anaesthetic room and at the same time was infused 2 litres of Hartman’s solution to produce acute haemodilution. The risk of contamination was avoided by not storing the blood pre-operatively. This technique also reduces the risk of common errors, which occurs during blood storage and transfusion.

It is proposed that patients with anti-Vel antibodies, undergoing elective major orthopaedic surgery, should be enrolled in an autotransfusion programme in order to avoid or decrease the use of homologous red blood cell transfusion. A blood saving programme including a pre- and perioperative predeposit, intra- and postoperative cell salvage, and acute normovolaemic haemodilution should be used for these difficult cases.

Using this technique, major orthopaedic surgery can safely be performed in patients with haematological problems that would otherwise require extensive use of haematological services from more than one transfusion centre.

**REFERENCES**


