Letters to the Editor

Anti-Leb (Lewis) antibody in renal transplantation, emphasizing the role of transfusion medicine in organ transplantation

Sir,

Anti-Lewis antibodies rarely cause hemolytic transfusion reactions and hemolytic disease of the newborn. But, Lewis blood group system incompatibility is proved to be significant in renal allograft rejection.[1]

Here, we discuss about a 47-year-old male, known case of chronic renal disease on hemodialysis treatment for six months. He presented with signs and symptoms of renal failure and anemia, no history of blood transfusions, and was planned for renal transplantation. Two voluntary kidney donors were tested. Patient’s blood group showed discrepancy in the serum grouping, positive (1+) reaction with ‘O’ pooled cells. Indirect antiglobulin test (IAT) was reactive 1+. Positive cross match was noticed with both the donors. Both are HLA (Human leukocyte antigen)/lymphocyte cross match compatible.

LISS - IAT at 37°C antibody screening with commercially available three red cell panel showed positive reactions with panel II (2+) and III (2+) while negative with I panel cells [Table 1]. The suspected antibody was positive at all phases of testing. Eleven red cell identification panel was positive with homozygous Le a-b+ cells (panel 1, 5, 6, 9, 10), negative with Le a-b- cells (panel 3, 4, 8), and Le a-b-cells in the panel 2, 7 [Table 2]. However, the reaction was weak and 1+ the pattern was exactly showing Le b antibody.[2]

The, anti-Le b was found in the patient with ImmunoglobulinG (IgG) component, causing clinically significant incompatibility with voluntary kidney donor red cells. To remove these allo-antibodies, three cycles of plasma exchange was done on three consecutive days along with Tacrolimus, MMF (Mycophenolate mofetil), and methyl prednisolone. Antibody screenings were negative after therapeutic plasma exchange. Renal transplantation was performed with one of the live kidney donor. There is no acute allograft rejection. Patient’s renal parameters improved. After six weeks, Coomb’s and antibody screening were tested negative. Follow-up after six months was uneventful.

Lewis incompatibility in renal transplantation shows increased risk of both cell-mediated and humoral immune-mediated allograft...
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Table 1: Antigram, three red cell panel shows Cell II and III positive reaction

| Rh-hr | Kell | Duffy | Kidd | Lewis | P | MNS | Luth | LISS |
|-------|------|-------|------|-------|---|-----|------|------|
| D     | C    | E     | c    | Ew   | K  | kpa  | kpb  | Jsa  | Jsb  | Fya | Fyb | Jka | Jkb | Lea | Leb | P1  | M | N | S | s | Lua | Lub | IAT |
| +     | 0    | 0     | +    | +    | 0  | 0    | 0    | 0    | 0    | +   | 0   | +   | 0   | +   | 0   | +   | +   | 0 | + | 0 | 0 | 0   | 0 | 2+ |
| +     | +    | +     | 0    | +    | 0  | +    | 0    | +    | 0    | +   | 0   | +   | 0   | +   | 0   | +   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 0     | 0    | 0     | +    | +    | 0  | 0    | 0    | +    | 0    | +   | 0   | +   | 0   | +   | 0   | +   | 0   | 0 | + | 0 | + | 0   | + | 2+ |

Table 2: Antigram, eleven red cell panel done at 370C AHG phase. Includes five antigen positive and six antigen negative reagent red cell samples

| Rh-hr | Kell | Duffy | Kidd | Lewis | P | MNS | Luth | LISS |
|-------|------|-------|------|-------|---|-----|------|------|
| D     | C    | E     | c    | Ew   | K  | kpa  | kpb  | Jsa  | Jsb  | Fya | Fyb | Jka | Jkb | Lea | Leb | P1  | M | N | S | s | Lua | Lub | IAT |
| 1     | +    | +     | 0    | +    | 0  | 0    | 0    | +    | 0    | 0   | +   | 0   | +   | 0   | +   | 0   | 0   | 0 | + | 0 | 0 | 0   | 0 | 1+ |
| 2     | +    | +     | 0    | 0    | + | 0    | 0    | 0    | 0    | +   | 0   | +   | 0   | 0   | 0   | +   | 0   | 0 | 0 | 0 | 0 | 0   | + | 0   |
| 3     | +    | 0     | +    | 0    | 0  | 0    | 0    | +    | 0    | 0   | +   | 0   | +   | 0   | +   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 4     | 0    | +     | 0    | +    | 0  | 0    | 0    | +    | 0    | 0   | +   | 0   | +   | 0   | +   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 5     | 0    | 0     | +    | +    | 0  | 0    | 0    | +    | 0    | +   | 0   | +   | 0   | +   | 0   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 6     | 0    | 0     | 0    | +    | 0  | +    | 0    | +    | 0    | +   | +   | 0   | +   | 0   | +   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 7     | 0    | 0     | 0    | +    | 0  | 0    | 0    | +    | 0    | 0   | +   | 0   | +   | 0   | 0   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 8     | +    | 0     | 0    | +    | 0  | 0    | 0    | +    | 0    | +   | 0   | +   | 0   | +   | 0   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 9     | 0    | 0     | 0    | +    | 0  | 0    | 0    | +    | 0    | 0   | +   | 0   | +   | 0   | 0   | +   | +   | 0 | + | 0 | + | 0   | + | 1+ |
| 10    | 0    | 0     | 0    | +    | 0  | 0    | 0    | +    | 0    | +   | 0   | +   | 0   | +   | 0   | 0   | +   | 0 | + | 0 | + | 0   | + | 0   |
| 11    | 0    | 0     | 0    | +    | 0  | 0    | 0    | +    | 0    | 0   | 0   | +   | 0   | 0   | 0   | +   | 0   | 0 | + | 0 | + | 0   | + | 0   |

*weak positive

rejection. HLA matching and Lewis matching are not only additive but that Lewis compatibility is the more important for transplant prognosis.[1]

Schweitzer et al. reported 15 patients with positive donor-recipient cross-match who were desensitized with plasmapheresis to permit live donor transplantation under newer maintenance immunosuppressants.[3]

Lewis, Duffy and Kidd antigens which are polymorphic and immunogenic expressed on kidney may be further studied to consider them as minor histocompatibility antigens.[4]

In conclusion, minor blood group incompatibility is not necessarily a contraindication to renal transplantation. Antibody screening, identification, titration, and evaluation of these minor blood group antibodies are mandatory before transplantation.

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