further analysis. Laboratory and clinical findings were also used to evaluate the clinical significance of the alloantibodies produced. **Results:** : Partial D phenotypes were found in 25/79 (31.6%) of these patients and included: DAR, DAU0, DAU3, DIVa, DIIIa, DVa, Weak partial D 4.0. Eight (32%) patients produced anti-D: 1 DAR, 1 DAU3, 1 DIVa, 1 DIIIa, 1 DVa, 3 DAU0. Laboratory and clinical evidence of a delayed hemolytic transfusion or decreased survival of transfused RBCs were associated with five anti-D produced in patients with partial D (DAR, DAU3, DIVa, DIIIa, DVa). Anti-D produced by the patients with partial D DAU0 were not clinically significant and patients with weak partial D 4.0 did not develop anti-D even with more exposures of D+ RBC units than those with the other partial D types. Unexpected anti-D was also found in 5/54 (9.3%) patients with conventional D type as a result of D+ RBC transfusions from donors with altered Rh epitopes. Anti-D was more persistent in patients with partial D DAR, DAU3, DIVa, DIIIa, DVa compared to those with DAU0 and conventional D. **Conclusions:** Patients with partial D are more likely to develop clinically significant and more persistent anti-D than patients with conventional D and therefore may benefit from prophylactic D- RBC units or *RHD* genotype-matched transfusions. Our results also suggest that patients with partial D DAU0 do not develop clinically significant anti-D and patients with weak partial D 4.0 are not at risk of developing anti-D.

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EVALUATION OF THE COST AND EFFECT OF PROPHYLACTIC GENOTYPIC MATCHING ON ALLOIMMUNIZATION AND AUTOIMMUNIZATION IN PATIENTS WITH SICKLE CELL DISEASE (SCD)

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Background: Blood transfusion is one of the mainstays of treatment for patients with SCD but despite of the beneficial effects, transfusion therapy can lead to red blood cell (RBC) alloimmunization with serious complications for the patient including life-threatening delayed hemolytic transfusion reactions and the hyperhemolysis syndrome. In addition, the presence of alloantibodies, which is often associated with the concomitant presence of autoantibodies, can lead to difficulty in finding compatible units, which can cause transfusion delays. To reduce alloimmunization some strategies have been implemented to provide antigen matched RBC transfusions to patients with SCD who need chronic transfusion support. In this context, phenotypic and genotypic matching protocols have been used. Based on this, the aim of this study was to evaluate the cost and the effect of prophylactic RBC transfusion genotypic matching on alloimmunization and autoimmunization in patients with SCD. **Methods:** Our study included 79 (33 male and 46 female) patients with SCD, homozygous for HbS, on chronic RBC transfusion therapy receiving prophylactic genotypic matching RBC transfusions in the last two years. In this period, patients received RBC units genotypic matched for Rh, K, Fya/Fy/b, Jka/Jkb, S/s, Doa/Dob and Dia antigens. Molecular matching was performed according to previous molecular typing results performed by the HEA BeadChip (Immucor) in patients and donors. Adsorption onto autologous RBC was also performed to aid the differentiation of autoantibodies from alloantibodies. The cost and availability of compatible units by performing genotypic matching were compared to serologic matching. **Results:** The patients received a range of 5-215 units. And the median age in this group was 39 years old. Of the 79 patients, 17 (21.5%) were alloimmunized before they started receiving genotypic matched RBC transfusions. During this study-period only 2 patients (2.5%) with Rh variants developed alloantibodies (1 anti-C, 1 anti-e) and no patient produced autoantibody. Although the availability of compatible units has decreased when compared to serological matching, it was possible to find compatible units for most patients. A cost reduction of 30% was observed in the genotypic matching compared to the serological matching for the selected matched antigens. **Discussion and conclusion:** RBC transfusions with extended genotypic matching had significant effects on autoimmunization and alloimmunization rates in chronically transfused patients with SCD over two years. Alloimmunization rates have shown to decrease from a range of 21.5 to 2.5% in these patients. SCD patients may benefit from receiving prophylactic genotypic matching RBC transfusions as demonstrated by the reduction on the rates of alloimmunization, autoimmunization and cost.

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ALLOIMMUNIZATION PREVALENCE IN PATIENTS WITH SICKLE CELL DISEASE (SCD): ASSESSMENT OF THREE TRANSFUSION PROTOCOLS

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Background: RBC alloimmunization is a major complication associated with RBC transfusion in patients with SCD with serious complications for the patient including life-threatening delayed hemolytic transfusion reactions and an increase in the risks inherent to transfusion such as TRALI, infectious diseases and the hyperhemolysis syndrome. In addition, the presence of alloantibodies, which is often associated with the concomitant presence of autoantibodies, can lead to difficulty in finding compatible units, which can cause transfusion delays. The prevalence of alloimmunization vary according to the transfusion protocols used and may be reduced by matching for RBC antigens. Based on this, the aim of this study was to assess the prevalence of RBC alloimmunization in patients receiving transfusions with ABO and D matching, with phenotype matching for C, E and K antigens and with extended minor RBC antigen matching. **Methods:** A total of 368 patients with SCD, homozygous for HbS were enrolled. In this period, 81 patients received RBC units matched for ABO and RhD, 188