Allosensitization Following Skin Allografts In Acute Burn Management – Are Burns Patients Suitable Transplant Candidates?

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Background
Composite tissue allotransplantation (CTA) is now a recognized reconstructive option for patients with severe facial[1] or upper limb burns. Pre-existing antibodies against donor human-leucocyte-antigens (HLA) is currently a contraindication to CTA. Burn patients often require cadaveric skin allograft in acute burn management, which are transplanted without HLA matching. This study aims to investigate if the use of skin allografts results in development of long-lasting anti-HLA antibodies, which jeopardizes the success of future transplantation.

Methods
Sera was collected from burn patients at 2-8 years following cadaveric skin allografting (n=14). Sera from burn patients who had autografts were used as negative controls (n=2). Allosensitisation was assessed by the presence of antibodies against HLA class I and II antigens using Luminex single antigen assay. Data regarding demographics, total burns surface area (TBSA %), number of skin donor, and additional potential allosensitising events (transfusion, pregnancy, previous transplant) was collected.

Results
Average TBSA % of allografted patients is significantly higher than autografted patients (47.5±13 allografted vs 21.5±6.3 autografted; p=0.017). Allografted patients received multiple blood products (32±26 allografted vs 0 autografted). Mean combined HLA Class I and II antibody level (calculated reaction frequency) was significantly higher in allografted patients (87.7±27.6% allografted vs 0% autografted).

Conclusions
Circulating anti-HLA antibodies persist up to 8 years after skin allografting. This has important implications since allografted patients will have smaller transplant donor pool, longer waiting time, or may be excluded as candidates for transplantation due to HLA allosensitisation.

References
1. Arno A, Barret JP, Harrison RA, Jeschke MG. Face allotransplantation and burns: a review. *J Burn Care Res*;33(5):561-76.

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