

RENAL TRANSPLANTATION. CLINICAL - 2

SP854 EVALUATION OF SUITABILITY OF KIDNEY FOR TRANSPLANT. HISTOMORPHOMETRIC ANALYSIS

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Introduction and Aims: Today kidney transplantation is the treatment of choice for most patients with advanced renal failure. Transplant from a cadaver, because of the shortage of cadaveric kidneys available and the increasing demand, the number of patients on the waiting list for a transplant is increasing and the number of kidney transplants from living donors remains low. To meet this need have been proposed some strategies to increase the donor pool. Therefore, it was necessary a systematic approach in the evaluation of marginal kidneys to identify kidneys at increased risk of prolonged dysfunction or failure. For this reason, it has been suggested a score (Karpinski) based on histological assessment of biopsies preimplantation organ. But there are several reasons to believe that the biopsy specimen is not satisfactory. First, no

study has clearly demonstrated the utility of using the actual score Karpinski as the unique criterion of allocation. Second, the allocation based on data of histological biopsy preimplantation does not take account of crucial information such as, for example, the age of the donor and the immunological risk. Third, the reading of the biopsy specimen remains always operator dependent. Our goal was to encode Histomorphometric analysis parameters of the kidney suitability with objective method.

Methods: We analyzed 100 kidney slides with traditional methods and by histomorphometric analysis each image was 24-bit in size 1072x672 pixels. To obtain the number of pixels (and thus the area) of each element, has been developed a script in Matlab able to acquire the images, converting them into arrays of size <672x1072x3>, where the first two values indicate the format, while the third dimension contains the luminance values assumed by the three RGB components of each pixel.

In particular, it was identified a range of values for each constituent element and then the software, scrolling through the image point by point, has recognized the pixels that satisfy the range color set.

Results: In an overall analysis of each slide had been highlighted a loss of potential functional glomeruli (32%) at histological examination. The samples are classified as having 25% of the white part glomerular (and therefore 75% of vascularized part) and 45% of the vessel wall (55% is attributable to the lumen).

Conclusions: A histomorphometric analysis can help histology in a more objective in determining the suitability of a kidney for transplant. In this way, in the future it will be possible to have a larger pool of donors and reduce the waiting lists for transplantation. This study requires an improvement of the software application and a greater number of slides to be analyzed.