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Kinetics of label retaining cells in the developing rat kidneys

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The kidney is a specialized low-regenerative organ with several different types of cellular lineages. The BrdU label-retaining cell (LRCs) approach has been used as part of a strategy to identify tissue-specific stem cells in the kidney. However, because the complementary base pairing in double-stranded DNA blocks the access of the anti-BrdU antibody to BrdU subunits, the stem cell marker expression in BrdU-labeled cells are often difficult to detect. In this study, we introduced a new cell labeling and detection method in which BrdU was replaced with 5-ethynyl-2-deoxyuridine (EdU) and examined the time-dependent dynamic changes of EdU-labeled cells and potential stem/progenitor markers in the development of kidney. Newborn rats were intraperitoneally injected with EdU, and their kidneys were harvested respectively at different time points at 1 day, 3 days, 1 week, 2 weeks and 6 weeks post-injection. The kidney tissues were processed for EdU and cellular markers by immunofluorescence staining. Our data found that at 6-week time point, EdU-labeled LRCs existing in the glomeruli expressed undifferentiated podocyte and endothelial markers at high rates, while those in the renal tubules expressed nestin and vascular markers at low rates. To understand the characterization and localization of these EdU-LRCs, further studies will be needed to test cell lineage tracing, clonogenicity and differentiation potency, and the contributions to the regeneration of the kidney in response to renal injury/repair.

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Renal transplantation in adult patients with severe learning disabilities, experience from a tertiary renal transplant center

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People with severe learning disabilities (LD) are more likely than the general population to have major health problems due to genetic syndromes, chromosomal abnormalities or congenital anomalies of the urinary tract causing chronic kidney disease. Patients with LD often face significant barriers to accessing medical treatment and life-saving treatment such as transplantation. People with LD are more vulnerable in acute hospital settings and at greater risk of adverse incidents compared to the general population. Recent studies indicate that 6-8.5% of adults in England have stage 3-5 chronic kidney disease (CKD). The prevalence of renal replacement therapies in England has grown by almost 50% over the last decade. Not everyone is a candidate for kidney transplantation due to conditions surrounding their quality of life. LD is an example in which it might be better for the patient to remain on dialysis as opposed to transplantation if they have issues with medication compliance. Renal transplantation in patients with LD raises a number of questions both clinically and ethically, such as potentially diverting scarce resources and donor kidneys away from patients with normal mental ability. The challenging experiences encountered by patients with LD at this unit led to the development and implementation of a formal individualized admission care plan, in advance of transplantation in order to provide, safe, high quality care without compromising patient safety. This study focused on the challenges posed pre-dialysis, pre-transplant, on admission, post-operatively and the importance of the multidisciplinary team in creating an individualized patient centered approach along with successes of all those transplanted.

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