Introduction

Objective: Detailed studies are not occurring in humans due to drug metabolism and regulations, and many pathologists are unfamiliar with the normal histology of immature tissues. When unanticipated death or disease results in a need for unscheduled deaths, age-matched controls are not available for comparison. As pathologists may be inexperienced in normal development, pathologists may not be able to discern the developmental stage of the developing kidney. Kidney development is complex and changes over time. It is critical to utilize kidney development standards to assist in identifying kidneys from toxicologic effects when age-matched controls are unavailable.

Impact Statement:

The normal histology of the kidney in immature animals is critical. Many pathologists are unfamiliar with normal histology of immature tissues and may not be able to differentiate immaturity from toxicologic effects when age-matched controls are unavailable.

Methods:

A total of 250 kidneys from 100 rat pups were studied. All kidneys were immersion fixed in 10% neutral-buffered formalin, routinely processed and embedded in paraffin. The kidneys were sectioned at 4u and stained with hematoxylin and eosin. For comparison to the normal kidney, two sets of kidneys were studied:

1. A single section of rat kidney at birth.2,5,7,9

2. A full set of tissues from Toxicologic Effects when Age-Matched Controls are Unavailable.

References


5 Conclusions

The normal kidney is composed of different stages of development until maturity. In human studies, nephron development is complete by birth, while in rat studies, nephron development is complete by PND 15. The renal medulla is the most immature zone at birth with no papilla present. The subcapsular nephrogenic area is complete by PND 15.

References


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