Mesonephric remnant hyperplasia in duplicated ureter associated with unilateral duplicated pelvicalyceal collection system

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BACKGROUND

- Mesonephric ducts are paired embryonic structures which differentiate into pelvic organs. In males, with the influence of testosterone, these embryonic structures differentiate into the epididymis, vas deferens, and seminal vesicles. In females, the mesonephric ducts generally regress completely.
- Mesonephric rests can be found in both male and female pelvic organs. In males, mesonephric remnants persist in the epididymis and paraepididymis. In females, they can be found in the epophoron, Skene’s glands, or as Gartner’s ducts/cysts. Mesonephric remnants can also exist without association with structural abnormalities.
- Rarely, mesonephric remnant hyperplasia (MRH) can be identified in pelvic organs of males and females. MRH has been reported in the renal pelvis, spermatic cord, vas deferens, urethra, prostate, uterine cervix and parametrium. Three types of MRH have been described: tubular, diffuse, and ductal.
- Mesonephric adenocarcinoma should be differentiated from MRH based on presence of mass, clinical symptoms, and histological findings. Key features for malignancy include nuclear atypia, high mitotic activity, necrosis and vascular invasion.

MATERIALS & METHODS

- The specimen consisted of a 12 cm long tubular segment of ureter with proximal dilatation up to 4 cm (Fig. 2). The specimen was serially sectioned to demonstrate double lumina lined by smooth, tan-white mucosa. No discrete mass was identified. The entire specimen was submitted for histologic evaluation.
- Microscopic examination was performed on H&E slides. Additional immunohistochemical (IHC) stains were also performed, including PAX8, GATA3, 34βE12, WT1, androgen receptor (AR), estrogen receptor (ER), progesterone receptor (PR), calretinin, inhibin, and alpha-Methylacyl CoA racemase (AMACR).

RESULTS

- Microscopically, two dilated ureteral lumina lined by unremarkable urothelium identified. Poci of ureteritis cystica with scattered von Brunn’s nests and chronic inflammation also seen (Fig. 3 H&E).
- In the wall of the proximal end of the ureter, unorganized proliferation of benign acini/tubules with luminal colloid-like material was identified. These structures were arranged in a lobular growth pattern and not associated with stromal desmoplasia. The acini were composed of a single layer of small cuboidal cells with scant to moderate cytoplasm and small inconspicuous nuclei. The lining cells were round to oval and variably sized. No nuclear atypia, mitoses, or vascular invasion was identified (Fig. 3 H&E).
- Immunohistochemical staining for PAX8, 34βE12, and AR showed strongly and diffusely positive staining in the acini (Fig. 4 PAX8, 34βE12, AR). The GATA3 immunostaining was focal, but strongly positive in these areas (Fig. 4 GATA3). AMACR immunostaining was weak and patchy (Fig. 4 AMACR). WT1, inhibin, calretinin, ER, and PR showed negative staining (Fig. 4 ER, PR, Calretinin, Inhibin, WT1). Background stromal cells were positive for ER and PR, but negative for WT1 (Fig. 4 ER, PR, WT1).
- The morphologic and IHC findings were consistent with mesonephric origin and the diagnosis of MRH. No discrete mass, nuclear atypia, increased or atypical mitotic activity, necrosis or vascular invasion was present.

CONCLUSIONS

- Duplicated collecting systems and MRH represent rare embryonic developmental disorders.
- These anomalies could be due to renal parenchymal malformations, abnormalities in renal migration, or abnormalities in the developing collecting system.
- MRH should be distinguished from a renal or urothelial neoplasm based on characteristic morphology and aid of IHC.

REFERENCES

- Wapner RF and Box GN. Mesonephric duct remnants (Gartner’s duct). Am J Roentgenol. 1978; 131:690-696.