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Introdução e Objetivo

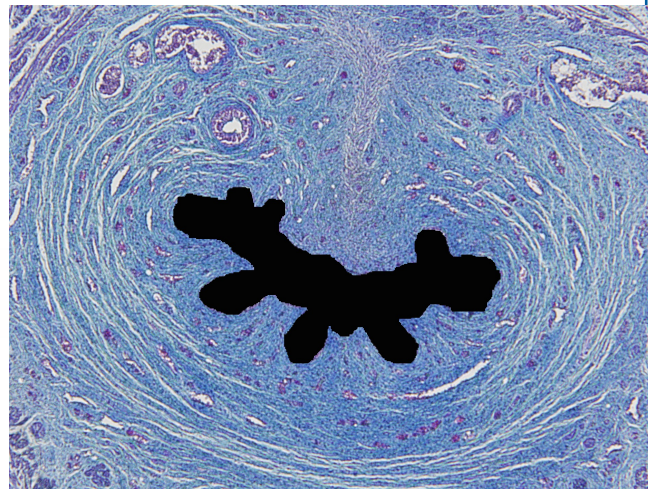
The increase in the prostate volume during the fetal period appears to be a determining factor for significant differences in the structure of the bladder neck and internal urethral sphincter in male fetuses. Studies of the structure and development of the prostate during the human fetal period are rare. The aim of this study was to determine the development of prostate thickness, the prostatic urethra and the histological components in the prostate during the human fetal period, by histological and stereological analysis.

Método

We studied 16 prostates obtained from 16 human fetuses ranging in age from 12 to 35 weeks post-conception. The fetuses were macroscopically well preserved, without anomalies of the urinary and genital system. The prostate was dissected and embedded in paraffin, from which 5- μ m thick sections were obtained and stained with Masson's trichrome to quantify connective and smooth muscle tissue, Weigert's resorcin fuchsin to observe elastic fibers. The images were captured with an Olympus BX51 microscope and Olympus DP70 camera. The stereological analysis was done with the Image Pro and Image J programs, using a grid to determine volumetric densities (Vv) and to determine the prostatic urethra lumen area and prostatic thickness. Means were statistically compared using simple linear regression and the paired T-test ($p < 0.05$).

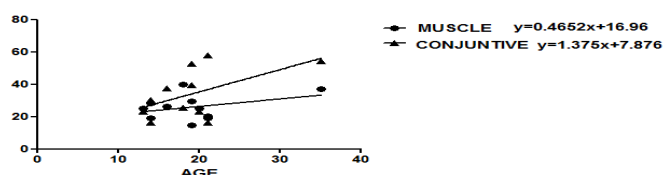
Figuras

The stereological analysis was done with the Image Pro and Image J programs, using a grid to determine volumetric densities (Vv) and to determine the prostatic urethra lumen area and prostatic thickness.



Resultados

The fetuses weighed between 210 and 2860g, and had crown-rump length between 9.5 and 34cm. We did not observe elastic system fibers in any prostate analyzed. Quantitative analysis indicated no differences in Vv of smooth muscle cells (mean = $30.66 \pm 3.585\%$) and connective tissue (mean = $42.86 \pm 5.928\%$) of prostates during the fetal period studied ($p = 0.0164$). The linear regression analysis indicated that the prostate thickness (mean = $1196,449\mu\text{m}$: 989.580 to 1403.016 μm) increases significantly and positively with fetal age ($r^2 = 0.27$). The linear regression analysis indicated that the prostatic urethra lumen (mean = $274659\mu\text{m}$: 77818 μm to 691027 μm) decreases during the fetal period ($r^2 = 0.10$).



Conclusão

The histological analysis of the smooth muscle and connective tissue of the developing prostate reveals that there are no differences during the fetal period studied. Prostate thickness increases with fetal age and prostatic urethra lumen decreases during the human fetal period.

Referências

Favorito La – Translational research applied to pediatric urology – Springer 2023