Human Pathology (2018) **76**, 91–99

ELSEVIER

Human PATHOLOGY

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Original contribution

Spectrum of findings in orchiectomy specimens of persons undergoing gender confirmation surgery☆,☆☆

Andres Matoso MD[a,*,1], Binny Khandakar MD[b,1], Songyang Yuan MD[b], Tony Wu MD[c], Li J. Wang MD, PhD[d], Kara A Lombardo BSc[d], Shamlal Mangray MBBS[d], Abul Ala Syed Rifat Mannan MD[b,2], Evgeny Yakirevich MD, DSc[d,2]

[a]*Department of Pathology, Urology, and Oncology, Johns Hopkins Medical Institutions, Baltimore, MD 21231, USA*
[b]*Department of Pathology, Mount Sinai Beth Israel Medical Center, New York, NY 10029, USA*
[c]*Department of Medicine, Rhode Island Hospital and Brown University, Providence, RI 02903, USA*
[d]*Department of Pathology and Laboratory Medicine, Rhode Island Hospital, Providence, RI 02903, USA*

Received 20 December 2017; revised 27 February 2018; accepted 7 March 2018

Keywords:
Transgender;
Transsexual;
Testes histopathology;
Leydig cells;
Orchiectomy;
Cytomegaly

Summary Gender confirmation surgery is increasingly common in persons with gender dysphoria. We describe changes seen in gonads from individuals seeking male-to-female physical adaptation. We studied 99 orchiectomies from 50 persons. The average age was 33 years (range, 21-63 years). Eighty-six (86.8%) of 99 testes were normal in size with an average size of 3.87 cm (range, 3.0-5.5 cm). Thirteen (13.1%) of 99 testes were hypotrophic and measured up to 2.5 cm. Seminiferous tubules were reduced in diameter compared with controls (0.137 mm versus 0.237 mm; $P < .001$) and showed peritubular fibrosis in 41 (82%) of 50 persons. In 40 (80%) of 50 persons, there was maturation arrest at the spermatogonia level. In 10 (20%) of 50 persons, the seminiferous tubules showed focal spermatids/spermatozoa up to 7 per 10 tubules mixed with partial maturation arrest at primary spermatocytes. Twenty-six (26%) of 99 testes showed seminiferous tubules with rare cells with large nuclei (3× size of Sertoli cells nuclei) and degenerative chromatin (cytomegaly). Leydig cells were absent in 50 (50%), markedly reduced in 30 (30%), and similar to controls (mean, 33/high-power field) in 20 (20%). A subset (20/99; 20%) of testes had epithelial hyperplasia of the proximal epididymis with stratification and micropapillae. There was no germ cell tumor, sex cord stromal tumors, or germ cell neoplasia in situ. In summary, the histologic changes include (1) decreased diameter of seminiferous tubules and expansion of the interstitium, (2) marked hypoplasia of germ cells, (3) rare cytomegaly, (4) hypoplasia or absence of Leydig cells, and (5) epididymal hyperplasia.

1. Introduction

Hormonal therapy followed by gender confirmation surgery (GCS) is becoming increasingly common in persons with gender dysphoria seeking male-to-female physical adaptation. Other names used to designate the same surgical

☆ Competing interests: The authors declare no conflict of interest.

☆☆ Source of funding: This study was supported by the Department of Pathology and Laboratory Medicine of Lifespan Academic Medical Center and the Department of Pathology of Johns Hopkins University.

* Corresponding author at: Johns Hopkins Hospital, Weinberg 2242, 401 N., Broadway, Baltimore, MD 21231-2410.
E-mail address: amatoso1@jhmi.edu (A. Matoso).

[1] These authors are co-first authors.
[2] These authors are co-senior authors.

https://doi.org/10.1016/j.humpath.2018.03.007
0046-8177/

procedure include "sex reassignment surgery," "gender reassignment surgery," or "sex change operation." The hormonal therapy and surgery are 2 steps of a multidisciplinary medical approach that also includes diagnosis, psychotherapy, real-life experience, and legal name change, all with the aim to help the person feel comfortable with their gendered self [1,2]. The surgical steps include removal of the entire scrotal skin, orchiectomy, dissection of the penis into its anatomical components, removal of the corpora cavernosa, and multiple other reconstructive procedures as described in various techniques reported [3-7].

Some of the histologic changes seen in these persons that have been reported in the literature include those related to the skin of the neovagina and the effects of castration and estrogen treatment on breast tissue [8,9]. Previous studies on histologic changes of testes in persons undergoing GCS have focused on the endocrinology aspect of the changes, specifically those related to the response to the hormonal therapy [10,11]. Given

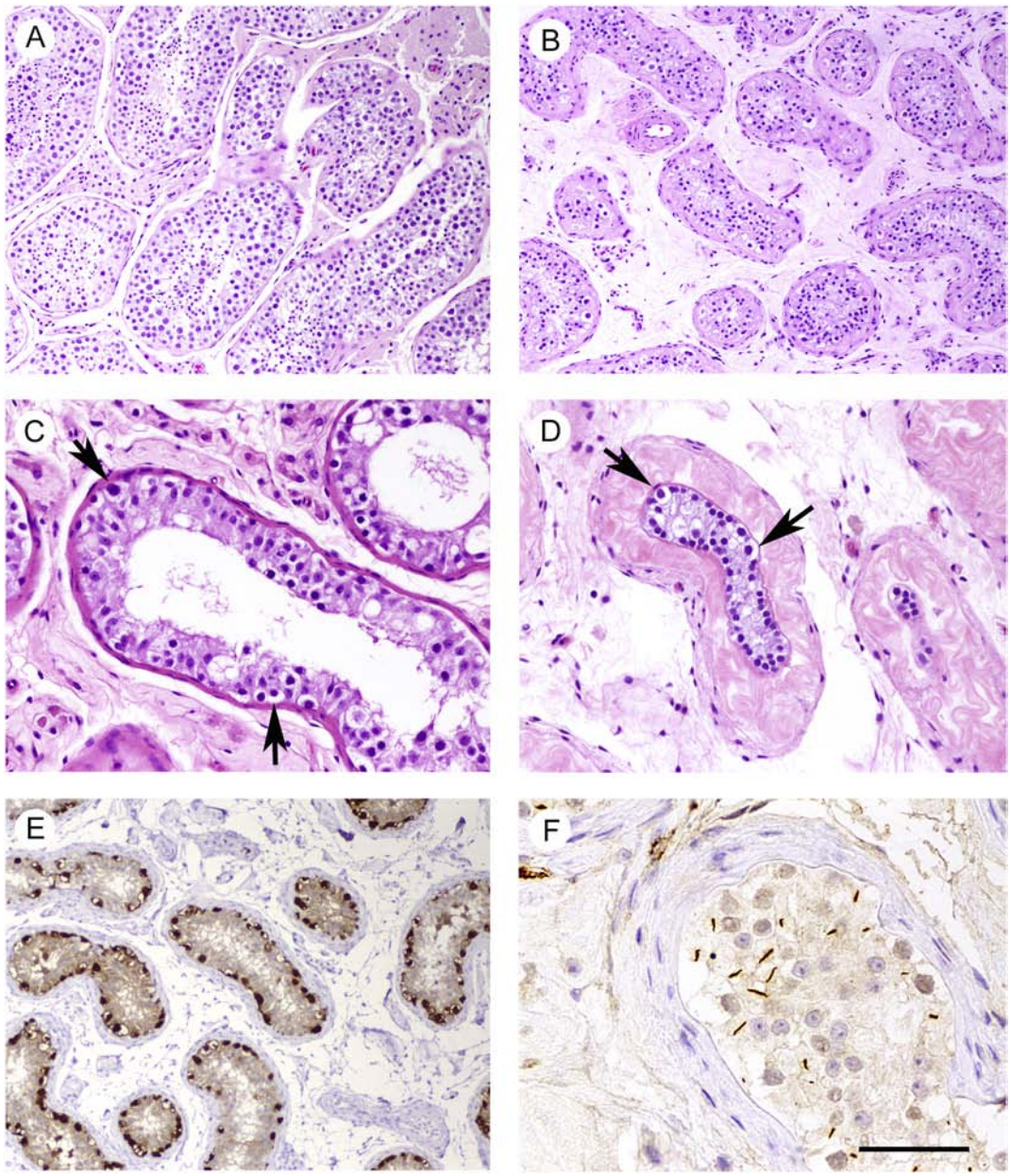

Fig. 1 Histologic findings in testicular parenchyma. A, Seminiferous tubules from control testes show active spermatogenesis and minimal intertubular space. B, Seminiferous tubules from a person undergoing GCS. Note the decreased seminiferous tubule diameter and increased intertubular space. C, Seminiferous tubule from a GCS patient showing a predominant population of Sertoli cells with scattered basally located spermatogonia with small nuclei (arrows) but no mature spermatozoa. D, Similar to panel C but with more prominent peritubular hyalinization. Arrows point to spermatogonia. E, Immunostaining for MAGEA4; nuclear staining highlights germ cells. F, Immunostaining for CD117 shows a peculiar linear staining between Sertoli cells and absence of staining pattern of GCNIS. Calibration bar is 400 μm for panels A, B, and E; 200 μm for panels C and D; and 100 μm for panel F.