

Journal of Andrology, Vol 22, Issue 4 640-645, Copyright © 2001 by The American Society of Andrology

JOURNAL ARTICLE

Assessment of the androgen environment within the human testis: minimally invasive method to obtain intratesticular fluid

J. P. Jarow, H. Chen, T. W. Rosner, S. Trentacoste and B. R. Zirkin

Department of Urology, School of Medicine, The Johns Hopkins University, Baltimore, Maryland 21287, USA. jjarow@jhmi.edu

Previous studies of the rat have shown that testosterone concentrations within the interstitial and seminiferous tubular fluids of the testes are significantly higher than normal serum levels, and further, that although intratesticular testosterone concentration can be substantially reduced without an effect on spermatogenesis, the concentration that is minimally required to maintain spermatogenesis is also substantially higher than serum levels. The purpose of the present study was to adapt a minimally invasive technique to sample human intratesticular fluid to enable parallel observations in man. To this end, aspiration methods were first developed for the rat testis and then adapted to the human. The testosterone concentration in fluid obtained by unilateral aspiration of rat testes was approximately 50 ng/mL, similar to the known concentration in seminiferous tubular fluid. These aspiration methods were then adapted to obtain intratesticular fluid from human testes. Studies of 12 fertile human subjects demonstrated that percutaneous testicular aspiration could be performed safely and successfully using a 19-gauge needle. Nine additional human subjects had bilateral testicular aspiration and simultaneous measurement of peripheral blood testosterone levels. Testicular aspirations yielded 8 to 117 µL of fluid from each testicle. The mean concentration of testosterone in aspirates obtained from the 21 patients was 609 ± 50 ng/mL. Dihydrotestosterone and 3α-androstenediol concentrations were quite low, below the limits of detection of our assay. The SHBG/ABP concentration in the aspirates was 8.5 ± 1.1 nM. These results define testosterone as the major androgenic steroid in the human testis, as in the rat testis, and indicate that the testosterone concentration within the human testis is approximately 200-fold greater than that of SHBG/ABP, and more than 100-fold greater than the concentration of testosterone found in normal human serum.

This article has been cited by other articles:

This Article

- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)

Citing Articles

- ▶ [Citing Articles via HighWire](#)
- ▶ [Citing Articles via Google Scholar](#)

Google Scholar

- ▶ [Articles by Jarow, J. P.](#)
- ▶ [Articles by Zirkin, B. R.](#)
- ▶ [Search for Related Content](#)

PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Jarow, J. P.](#)
- ▶ [Articles by Zirkin, B. R.](#)



Reproduction

▶ HOME

M. L. Meistrich and G. Shetty

Hormonal suppression for fertility preservation in males and females

Reproduction, December 1, 2008; 136(6): 691 - 701.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of ANDROLOGY

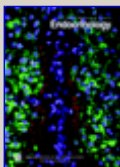
▶ HOME

S. T. Page, T. F. Kalhorn, W. J. Bremner, B. D. Anawalt, A. M. Matsumoto, and J. K. Amory

Intratesticular Androgens and Spermatogenesis During Severe Gonadotropin Suppression Induced by Male Hormonal Contraceptive Treatment

J Androl, September 1, 2007; 28(5): 734 - 741.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Endocrinology

▶ HOME

K. L. Porter, G. Shetty, and M. L. Meistrich

Testicular Edema Is Associated with Spermatogonial Arrest in Irradiated Rats

Endocrinology, March 1, 2006; 147(3): 1297 - 1305.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



HUMAN REPRODUCTION

▶ HOME

J. L. Marmar and S. Benoff

The safety of ultrasonically guided testis aspiration biopsies and efficacy of use to predict varicocele outcome

Hum. Reprod., August 1, 2005; 20(8): 2279 - 2288.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of ANDROLOGY

▶ HOME

J. P. Jarow, W. W. Wright, T. R. Brown, X. Yan, and B. R. Zirkin

Bioactivity of Androgens Within the Testes and Serum of Normal Men

J Androl, May 1, 2005; 26(3): 343 - 348.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

▶ HOME

A. D. Coviello, A. M. Matsumoto, W. J. Bremner, K. L. Herbst, J. K. Amory, B. D. Anawalt, P. R. Sutton, W. W. Wright, T. R. Brown, X. Yan, *et al.*

Low-Dose Human Chorionic Gonadotropin Maintains Intratesticular Testosterone in Normal Men with Testosterone-Induced Gonadotropin Suppression

J. Clin. Endocrinol. Metab., May 1, 2005; 90(5): 2595 - 2602.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of ANDROLOGY

▶ HOME

A. D. Coviello, W. J. Bremner, A. M. Matsumoto, K. L. Herbst, J. K. Amory, B. D. Anawalt, X. Yan, T. R. Brown, W. W. Wright, B. R. Zirkin, *et al.*

Intratesticular Testosterone Concentrations Comparable With Serum Levels Are Not Sufficient to Maintain Normal Sperm Production in Men Receiving a Hormonal Contraceptive Regimen

J Androl, November 1, 2004; 25(6): 931 - 938.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

