Notes for Wednesday, December 4, and Friday, December 6, 2002

Duct system

Outline:
Male reproductive system: testes - structure & function
Male duct system
Accessory glands
Semen
Penis

Male Reproductive System

- Scrotum = support structure for testes
- Dartos & cremaster muscles help regulate temp. of testes
- Sperm production occurs at 2-3 degrees C below normal core body temp.

Testes

- Surrounded by fibrous capsule = tunica albuginea
- 200-300 lobules/testis
- 2-3 seminiferous tubules/lobule where spermatogenesis occurs

- Cryptorchidism
- Testicular cancer

Structure of the seminiferous tubule:
  spermatogonia (2n; stem cell)
  primary spermatocytes (2n)
  secondary spermatocytes (n)
  spermatids (n)
  sperm cells (n)

- Sertoli cells = sustentacular cells: protect & nourish sperm; secrete hormone INHIBIN
- Leydig cells = interstitial cells: secrete testosterone

Sperm cell

- 65-75 days to mature
- 300 million/day
- Head: nucleus + acrosome
• Midpiece: mitochondria
• Tail = propeller

**Hormonal control of spermatogenesis**

• Hypothalamus secretes Gonadotropin Releasing Hormone (GnRH)
• Anterior pituitary secretes:

  **Gonadotrophic hormones:**
  1. Luteinizing hormone (LH) stimulates Leydig cells to secrete TESTOSTERONE
  2. Follicle stimulating hormone (FSH) stimulates spermatogenesis

**Testosterone**

• Prenatal development
• Development of male sexual characteristics
• Development of sexual function
• Stimulates protein synthesis

• Epididymis (x2)
• Ductus (vas) deferens (x2)
• Spermatic cord (x2)
• Inguinal canal (hernia)
• Ejaculatory ducts (x2)
• Urethra (x1)

**Accessory sex glands**

• Seminal vesicles (x2) secrete alkaline viscous fluid - 60% of semen
• Prostate gland (x1) secretes slightly acidic fluid - 25% of semen
• Bulbourethral glands (x2)
**Semen**
= sperm + secretions from accessory glands

- 50-150 million sperm/ml
- Slightly alkaline
- Transports & nourishes sperm; neutralizes acidic male urethra & female vagina

**Penis**
- Contains urethra
- Passageway for urine & semen
- Root
- Glans

**Body**
- Three masses of erectile & highly vascular tissue: 2 x corpra cavernosa
  1 x corpus spongiosum
- Erection: vasodilation of arteries to penis => sinuses become engorged with blood