BTesticolul.

Celule Leidig -- secretie de TST, putin E2, DHT. in principal DHT e obtinut prin metabolizare intracelulara prin act. 5 alpha reductazei 2( enzima microzomala cu act optima in mediul acid). Au actiune la nivel nuclear prin legare de rec de androgeni de pe CRZ X.

tubi seminiferi -- cel Sertoli - rol in maturarea spz si in bariera hematotesticulara

-- spermatogonii in diferite stadii de maturare spermatogonie --> spermatocit primar --> spermatocit sec --> spermatide (23 crz) --> spz. Dureaza 64 zile,

Spz ajung din ducte in rete testis apoi in ductele eferente apoi in epididim, unde mai stau 12-14 zile apoi in duct deferent. Unde ajunge secr veziculelor seminale - fructoza, 80% din vol spermei. Apoi se deschide in uretra prostatica, unde vine secr prostatica, cu spermine, citric acid, cholesterol, phospholipids, fibrinolysin, fibrinogenase, zinc, acid phosphatase, and prostate-specific antigen.

Control secretie : GNRH --> LH --> TST. TST inhiba secr de LH, prin aromatizare locala la E2. DHT determina scaderea frecventei pulsurilor de LH, E2 determina scaderea amplitudinii pulsurilor de LH.

GNRH --> FSH --> cel sertoli --> testosteron binding protein --> concentratie crescuta de TST intratesticular pt spermatogeneza. In plus act pe cel germinale pt initiere spermatogeneza. Cel sertoli secr Inhibina B care determina feedback negativ pe FSH, fara sa influenteze LH.

Cel sertoli mai secreta IGF1, transferina, AMH.

In sange TST circula legat de SHBG, Albumina, doar 2% este liber.

SHBG increased by estrogen, tamoxifen, phenytoin, or thyroid hormone administration and by hyperthyroidism and cirrhosis and are decreased by exogenous androgens, glucocorticoids, or growth hormone and by hypothyroidism, acromegaly, obesity, and hyperinsulinemic states.

Intra in celula si se leaga de rec nuclear-> activare sinteza genica

La adult penis 12-16 cm, vol testicular 15ml (= 3,5-5,5 cm lungime cu 2,5-3,5 cm latime).

Cauze:

● Hypothalamic-Pituitary Disorders:

Panhypopituitarism

Isolated LH deficiency (fertile eunuch)

Isolated FSH deficiency

LH and FSH deficiency

a. With normal sense of smell

b. With hyposmia or anosmia (Kallmann syndrome)

c. With complex neurologic syndromes

Prader-Willi syndrome

Laurence-Moon, Bardet-Biedl syndromes

Möbius syndrome

Lowe syndrome

Cerebellar ataxia

Biologically inactive LH

4Hyperprolactinemia

● Gonadal Abnormalities

Klinefelter syndrome

Other chromosomal defects (XX male, XY/XXY, XX/XXY, XXXY, XXXXY, XXYY, XYY)

Bilateral anorchia (vanishing testes syndrome)

Leydig cell aplasia

Cryptorchidism

Noonan syndrome

Myotonic dystrophy

Adult seminiferous tubule failure

Adult Leydig cell failure

Defects in androgen biosynthesis

●Defects in Androgen Action

Complete androgen insensitivity (testicular feminization)

Incomplete androgen insensitivity

Insuficienta de tubi seminiferi:

♢ mumps or gonococcal orchitis, l

♢leprosy,

♢ cryptorchidism,

♢irradiation,

♢ uremia,

♢ alcoholism,

♢paraplegia,

♢ lead poisoning,

♢ antineoplastic agents such as cyclophosphamide, chlorambucil, vincristine, methotrexate, and procarbazine. ♢ Vascular insufficiency resulting from spermatic artery damage during herniorrhaphy, testicular torsion, or sickle cell anemia may also selectively damage the tubules.

♢ varicoceles.

♢micro deletii crz Y - deletions of portions of the Y chromosome may also present as adult seminiferous tubule failure.

♢ idiopathic.

Clinic infertilitate, tst usor mai mici prin atrofiere de tubi, fara ginecomastie sau semne de hipogonadism

TST, LH normale, FSH crescut, inhibina B scazuta, oligo/azoospermie

Trt medicamentos - nu ajuta, eventual ch pt varicocel, dar nu e clar dc are efect. La postiradiere, isi pot recapata functia. Postinfectios, vascular - nu.

ANDROPAUZA

Scaderea act cel Leydig, lent dupa 50 ani. Scade TST, mai ales TST liberprin crestere SHBG. Creste LH si scade raspunsul la betaHCG. Probabil prin afectare vasculara

Clinic - semne de deficit de hh.

HIPOGONADISM LA BARBATI adulti

Simptome + TST scazut !! Poate fi scazut temporar de boli acute/grave, malnutritie.

Variatii circadiene (60-140ng/dl), pulsuri la 90 minute

RIA - TST mai mare de 280-300ng/dl

TST ( liber dc banuiesc afectare de SHBG), cel putin de 2 ori. Apoi FSH, LH.

daca crescute - kariotip. Dc scazute - prl, fier, rmn de hpf

Nu fac screening pt hipogonadism in pop gen dar caut la cei cu patologie hipofizara, incl iatrogena, Hiv Cu scadere in greutate, trt cu CoT, BMD scazut, trt cu opioizi. Fx la trauma minima

Boli sistemice pot afecta hpf si test, dar de obicei predomina hipogonadismul hipo sau hipergonadotrop. Ex IRC det aspect de hipog. HIPERgonadotrop dat eliminarii scazute decFSH, LH la nivel renal.

Hemocromatoza det de obicei hipogonad hipogonadotrop.

VANISHING testes syndrome

Disparitia test in viu, dar dupa sapt 16 ai au OGE ext normale masculine si nu au struct din ductele muller. Cauze ?, prob torsiune. Bilat 1:20.000 nn, unilat 1:5.000 nn.

Micropenis la nastere apoi eunucoidism si pub intarziata.

Dg dif criptorhidism bilat - hipogonadism hipergonadotrop cu FSH si LH crecuti. Nu raspunde la hCG lung ( 1000 u-2000U, \* 3 /saptamana, 2 sapt. Dar exista cazuri de criptorhidism bilat care nu raspund. Dozarea de AMH este mai sensibila pt diferentiere

HIPOGONADISM IATROGEN

- KETOKONAZOL la doze >400 mg/zi - inhiba 17-20lyaza si 17 alpha hidroxilaza

-SPIRONOLACTONA - antagonist AR, dar in doze mari inhiba 17-20 lyaza si 17 alpha hidroxilaza. Elib estradioli de pe SHBG.

- Agenti alkilanti blocheaza spermatogeneza, la doze mari afect si cel Leydigh - dupa 5 ani de la trt, in 80% din cazuri se reia spermatogeneza

-Radioterape

ORHITA

-urliana, postpubertara.atentie 50% cazuri e asimptomatica. Uni/bilaterala dar fibroza de tubi seminiferi e bilaterala. CoT in cz grave dar nu modif prognosticul.

- HiV

- echovirus, arbovirus, chlamidia, e coli, etc

INSUFIC HEPATICA

Creste SHBG, spironolactona det hipogonadism, apare atrofie testiculara, Hiperestrogenemie care poate sa supreseze cresterea de LH.

Tratament cu testosteron bine tol, ocazional ginecomastie, agravare ascita si retentie hidrica

INSUFIC RENALA - cresc FSH LH pt ca nu se elimina. In caz de sindr nefrotic scade SHBG. Anomalii de spermatogeneza si secr testosron. Trt - transplant

VARSTA

initial scade testosteronul, cu aspect de hipogonadism sec apoi incep sa creasca FSH, LH cu aspect de hipogonadism primar. Complicat de polimedicatie si polipatologie asoc.

Trt cu testosteron creste forta fizica dar atentie la riscul de neo prostata, patolog CV

criptorhidism, sindr Down, distrof musculara - determina afectare de spermatogeneza, cu FSH crescut, fara scadere test si crestere LH. trt cu gonadotropi sau GnRH nu det ameliorarea spermatogenezei.

Varicocel - tulb de spermatogeneza

Microdeletii crz Y - regiunile AZFa, b sau c. De la azoospermie la oligospermie. Sfat genetic dc se va face injectie intracitoplasmatica

Sindr SertoliOnli- tubi doar cu cel sertoli, fara spz. Test usor scazuti in dim, androgenizare normala, LH norma, FSH crescut. Dobandit dupa RT/cht sau congenital.

Patologie de cili

Infectii resp frecvdnte, care duc la bronsiectazii. FSH, LH, TST normale, spermograma cu spz imobili. Dc are si situs invers - sindr Kartagener.

Mutatii gene legate de cili - dyneina

In plus - toxice & disruptori din mediu. Boli acute, de obicei tranzitor. Limf Hodgkin, chiar si inainte de trt. Paraplegie (lipsa inerv S/PS locale cu crestere temp).

Opioidele, mai ales cele cu durata mare de actiune determina supresie FSH/LH. Administr de naloxon creste frecventa si intensitatea pulsurilor de LH. In plus determina asthenospermie dar in cz grave teratospermie sau oligospermie

Steroizi anabolizanti pt sport - hipogonad hipogonadotr cu oligo/azoospermie. Isi revin in cateva luni DAR unii nu isi revin - evaluez ca un hipogonadism hipoginadotrop, incl imagistica.

MedroxiPg, megestrol (progestativ care se foloseste pt crestere in greutate la pccu hiv) det hipogonadism. Are risc de insuficienta SR. creste masa grasa)

Agonisti si antagonisti de GnRH