Urology CHEAT SHEETS

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INFERTILITY, SEMEN ANALYSIS AND POSSIBLE DIAGNOSIS

ABNORMALITY	DIFERENTIAL DIAGNOSIS	
VOLUME **Normal ≥ 1.5 ml**	RETROGRADE EJACULATION	BPH medical/surgical treatments, neurological disorders, spinal cord injury, diabetes Post ejaculation urinary analysis: indicated if volume <1ml (exceptions: hypogonadism and CBAVD)
	INCOMPLETE COLLECTION	Review method and recollect if suspect incomplete collection
	ABSCENSE SEMINAL VESICLES EJACULATORY DUCT OBSTRUCTION	Low volume and acidic pH Transrectal US/ pelvic MRI (if obstruction: large distended vesicles)
PH **Normal 7.2-8**	ABSCENSE SEMINAL VESICLES EJACULATORY DUCT OBSTRUCTION	Low volume and acidic pH Transrectal US / pelvic MRI (if obstruction: large distended vesicles)
SPERM CONCENTRATION/ PRETESTICULAR **Normal ≥15 million/mL** **Azoospermia+ Hypo-Hypo: prolactin and pituitary imaging**	SECONDARY TESTICULAR FAILURE (hypogonadotropic hypogonadism)	Low FSH, LH , testosterone Bilateral testicular atrophy and pituitary disorder Prolactin: hyperprolactinemia inhibits GnRH and may indicate pituitary adenoma MRI: pituitary adenoma, empty sella syndrome
	KALLMAN SYNDROME	Congenital hypogonadotropic hypogonadism and ANOSMIA Delayed puberty
	ANABOLIC STEROIDS	Induces hypogonadotropic hypogonadism Exogenous androgens: suppress GnRH Bilateral testicular atrophy, normal or increased seminal vesical fluid HYPOGONADISM and INTERESTED IN FERTILIY: DO NOT TREAT WITH TESTOSTERONE (treat with clomiphene or anastrozole, hCG injections) *Clomiphene: inhibits estrogens negative feedback: increases FSH, LH, testosterone and estradiol (via aromatasa) *Anastrozol: inhibits the conversion of testosterone to estrogens in peripheral tissues.
SPERM CONCENTRATION/ TESTICULAR **Normal ≥15 million/mL** **Azoospermia+ Hyper-hypo: karyotype and Y-microdeletion**	PRIMARY TESTICULAR FAILURE	Hypergonadotropic hypogonadism High FSH, LH, low testosterone, bilateral testicular atrophy KARYOTYPE: 5-10% abnormal, most common KLINELFELTER Also indicated if severe oligospermia
	KLINEFELTER SYNDROME 47XXY	Hypergonadotropic hypogonadism ** MicroTESE: sperm retrieval rate 40-60% Tall, eunuchoid habitus, breast cancer, testicular tumor
	SERTOLI CELL ONLY SYNDROME	Leyding and sertoli cells present, but lacking germ cells High FSH, normal LH/testosterone. Causes: idiopathic, Y microdelection, Klinefelter, radiation May try testicular biopsy but unlikely: 25% sperm retrieval microTESE
	Y CHROMOSOME MICRODELECTION (Yq11), 10-15%	AZFa/AZFb: no ICSI AZFc (80%): possible ICSI via TESE (in 50% sperm.found).DAZ gene crucial for espermatogenesis
	VARICOCELE	40% infertile men. Majority 90% on left side (in right check retroperitonemum) **Teratospermia, asthenospermia, oligozoospermia - GRADE 1: Palpable with valsalva - GRADE 2: Palpable without valsalva - GRADE 3: Visible without Valsalva REPAIR: Palpable AND oligozoospermia and no other infertility causes CHILDREN: + size discrepancy BEST APPROACH: Microsurgical *2/3 semen analysis improve (monitor every 3 months)
SPERM CONCENTRATION/ POST-TESTICULAR **Normal ≥15 million/mL**	CONGENITAL BILATERAL ABSENCE OF THE VAS DEFERENS (CBAVD) CYSTIC FIBROSIS	Low volume and acidic semen 2/3 have CFTR MUTATION (cystic fibrosis) If unilateral vasal agenesis, likely contralateral, partial or complete vasal atresia Renas US: renal agenesis: 25% unilateral, 10% bilateral vas deferens absence
	YOUNG SYNDROME	Obstructive azoospermia, bronchiectasis, sinusitis Thick epididymal secretions
	VASECTOMY	Most common cause of azoospermia Vasovasostomy: time since surgery is most important prognosis factor
	EJACULATORY DUCT OBSTRUCTION	Low semen volume and normal testis **If low volume, normal testicles and vas deferens: check pH, fructose and TRUS: midline cysts, dilated ducts and /or vesicles **If normal volume, normal FSH and azoospermia: testicular biopsy. If normal: obstructive
MOTILITY **Most common isolated abnormal parameter** **Normal: Total Motility ≥40%** **Progressive Motility ≥32%**	KARTAGENER SINDROME	Primary ciliary dyskinesia. Situs inversus, chronic sinusitis, bronchiectasis Autosonal recessive, 7p
	ANTI-SPERM ANTIBODY	Results in agglutination Only IgA and IgG found in male genital tract Indications: asthenospermia with normal concentration, agglutination, abnormal postcoital test
	GENITAL TRACT INFECTIONS	Antibodies causes sperm agglutination
	VARICOCELE	
VITALITY (nigrosine eosin stain) **Normal ≥58% alive**	INFECTION, GENETIC, TOXINS, DRUGS, VARICOCELE, TESTES HEAT EXPOSURE	
MORPHOLOGY **Normal ≥4%**	VARICOCELE, GENETIC DEFECTS ROUND HEAD SPERM	
LEUKOCYTE COUNT **Normal < 1 million/mL**	INFECTION, SMOKING, ALCOHOL , DRUGS	
FRUCTOSE	SEMINAL VESICLE ABSCENSE EJACULATORY DUCT OBSTRUCTION	Low volume and acidic pH Transrectal US / pelvic MRI (if obstruction: large distended vesicles)