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True or false? Most testicular tumors are germ cell tumors?

True. Up to 95% of testicular tumors are germ cell tumors with roughly half of these being seminomas making a seminoma the most common testicular tumor. Testicular germ cell tumors are the most common non-hematological malignancy in young male adults.

What are classic risk factors for development of testicular cancer?

Classic risk factors for testicular cancer include cryptorchidism, Klinefelter's syndrome, chronic orchitis, gonadal dysgenesis, and possibly testicular microlithiasis.

What testicular tumors are most common in the first decade of life?

Teratomas and yolk sac tumors.

What testicular tumors are most common in elderly males?

Testicular lymphoma and spermatocytic seminoma.

What is the difference between classic seminoma and spermatocytic seminoma?

Classic seminoma: A classic seminoma looks like a homogeneous hypoechoic on ultrasound round intratesticular mass with smooth margins that often is T2 hypointense on MRI. These are most common in adults around the 4th decade.

Spermatocytic seminoma: Only about 5% of all seminomas, presents in much older males, low metastatic potential, cells look like secondary spermatids, thus the name.

Both: Usually unilateral. Not commonly associated with elevated alpha-fetoprotein (AFP), may have slight b-HCG elevation.

What testicular tumor is most common in teenage males?

Choriocarcinoma.

True or false? Orchiopexy reduces cancer risk in the setting of cryptorchidism?

False. Cryptorchidism is associated with an increased risk of developing testicular cancer, and this risk in both testicles persists despite orchiopexy.

True or false? Seminomas can arise outside of the testicles.

True. The anterior mediastinum is the most common site of an extratesticular seminoma.

What is the prognosis of a seminoma?

Seminomas generally have a favorable prognosis as they respond very well to therapy that includes radiation.

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What are names of various non-seminomatous germ cell tumors of the testicle?

Non-seminomatous germ cell tumors include choriocarcinomas, teratomas, yolk sac tumors, and mixed germ cell tumors. On imaging, these non-seminomatous germ cell tumors tend to appear more heterogeneous and calcified, and often present in even younger age groups (such as teenagers). Note that unlike most malignancies that are most prevalent in older individuals, testicular tumors are notably more prevalent in teenagers and young adults.

True or false? Testicular choriocarcinoma most commonly metastasizes through the lymphatics?

False. A choriocarcinoma most commonly demonstrates hematogenous metastases whereas most testicular tumors otherwise show lymphatic spread to the retroperitoneum at the level of the renal hilum first. Note that this is a somewhat unique pattern of spread, in particular contrasting to the nodal spread of prostate cancer that usually starts in the pelvis and extends superior, testicular cancer (excluding choriocarcinoma that most commonly spreads hematogenously) may first spread to the extrapelvic retroperitoneum.

If ultrasound shows multiple hypoechoic testicular masses, this is most common for what entity?

Testicular lymphoma should be considered if multiple hypoechoic masses are seen within the testicle. Testicular lymphoma is notable in cases of systemic lymphoma because the blood testes barrier can prevent systemic therapy from reaching, and therefore treating sites of testicular lymphoma. On FDG-PET scans for lymphoma, one must not forget to evaluate the scrotum for any hypermetabolic testicular masses that could represent testicular lymphoma or another testicular malignancy. If testicular lymphoma is present, orchiectomy may be indicated given difficulty treating these masses with chemotherapy due to the blood testes barrier.

True or false? Testicular tumors can theoretically spontaneously regress.

True. Although management can be controversial, one can have a burned out testicular tumor that often presents as dense calcifications in older males. It is difficult to confirm on imaging, however, whether viable tumor may still be present, and regression may be only partial.

What is the top cause of acute scrotal pain in adults?

Epididymitis. Causes include gonorrhea and chlamydia infections or an E. coli infection. Imaging findings on ultrasound include epididymal head enlargement with increased blood flow.

What is a classic cause of isolated orchitis without co-existing epididymitis?

Mumps classically can cause orchitis without associated epididymitis.

True or False? Testicular fracture typically requires surgery whereas testicular rupture does not.

False. Testicular fracture often can be managed non-surgically whereas testicular rupture often requires surgery.

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What are other key differences between testicular fracture and testicular rupture?

Testicular rupture: disrupted tunica albuginea, poorly defined testicular outline with a heterogeneous testicle.

Testicular fracture: intact tunica albuginea, testicle demonstrates a hypoechoic linear band through the testicle and maintains a well-delineated testicular outline

What are common imaging findings of testicular torsion on ultrasound?

Imaging findings of testicular torsion include absent or decreased blood flow within the affected testicle compared to the contralateral testicle, asymmetric testicular enlargement, and a more hypoechoic appearance of the torsed testicle.

What is the so-called bell clapper deformity?

The bell clapper deformity is an unusually high attachment of the tunica vaginalis that allows increased mobility and twisting of the testicle and raises risk for testicular torsion. As the bell clapper deformity usually involves both testicles, surgery involving orchiopexy should be performed on both sides.

What are some of the classic imaging features of a testicular epidermoid cyst?

Classic imaging features of a testicular epidermoid cyst include an “onion skin” appearance of the mass that tends to show less blood flow than the normal testicle. Note that testicular epidermoid cysts are benign.

What is a leading cause of calcification of the vas deferens?

Diabetes.

What is the classic cause of tubular ectasia of the rete testes?

Partial or complete obliteration of the efferent ducts that causes cystic dilation of the rete testes about the mediastinum testes. This is a benign finding.

On a board exam, if they present you with a scenario of bilateral Sertoli Leydig cell tumors of the testicle, what underlying disease entity should you consider?

Peutz Jeghers syndrome.

What testicular tumors are associated with an elevation in hCG?

The testicular “omas” meaning seminoma and choriocarcinoma.

What testicular tumors are associated with high levels of AFP?

Testicular mixed germ cell and yolk sac tumors.

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What is the triad of Zinner syndrome?

1. Unilateral renal agenesis.
2. Ipsilateral seminal vesicle cyst.
3. Obstruction of the ejaculatory duct.

Think of this when you are presented with a history of male infertility and renal agenesis.

What are common causes of obstructive male infertility?

Cystic fibrosis with bilateral vas deference absence, Zinner syndrome, other causes of ejaculatory duct obstruction to include prostatic cysts.

What are common causes of non-obstructive male infertility?

Varicocele, erectile dysfunction, anabolic steroid use, cryptorchidism.

Is a varicocele more common on the right or on the left?

Left.

If you are presented with a unilateral right-sided varicocele, what underlying process must you consider?

Bulky retroperitoneal lymphadenopathy or another retroperitoneal mass that causes right gonadal vein compression/obstruction. This can be a presenting sign of malignancy in the retroperitoneal space and can be seen with metastatic cancers to include testicular cancers.

If you are presented with a paratesticular mass in a young boy, what classic tumor should be considered first?

Rhabdomyosarcoma as this can present as a paratesticular mass. Note that the botryoid variant of rhabdomyosarcoma has a characteristic “bunch of grapes” appearance. This is the most common bladder cancer in young boys.