Diagnostic Newsletter

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April – May – June 2022 – Newsletter – Mini Journal

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Thyroid Nodules

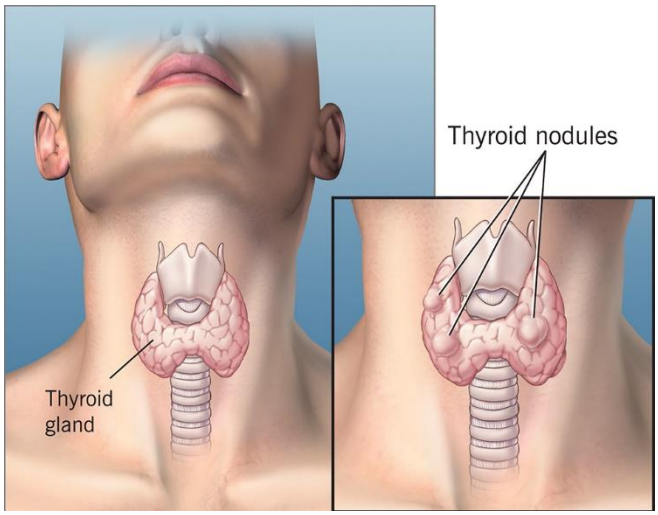

Image 1. Illustration of thyroid gland and associated nodules.

Thyroid nodules refer to any lumps found within the thyroid gland. These can be nodular goitres (a swelling of the thyroid), due to toxic multinodular goitres, benign thyroid tumours, thyroid carcinoma, or thyroid cysts.

Most thyroid masses are benign (thyroid adenoma), however around 5% are malignant. Distinguishing the two is crucial. An enlargement of the thyroid gland is termed 'goitre'. Goitres can be multinodular or consisting of just one nodule. These nodules can be cystic, colloid, hyperplastic, adenomatous of cancerous. The most common cause of a goitre in developing countries is iodine deficiency, however in the UK this is less common. In the west, autoimmune conditions such as Hashimoto's thyroiditis and Graves' disease are more common causes of goitre.

Once the patient presents, the thyroid nodule must be examined via thorough physical examination. Red flag features include stridor associated with thyroid mass, a child with a thyroid nodule, voice hoarseness, painless and enlarging mass, and palpable cervical lymphadenopathy. Initial investigations include thyroid function tests, ultrasound, fine-needle aspiration, CT, and MRI. Management is dependent on investigational findings.

Abdominal aortic aneurysm (AAA) classification

An abdominal aortic aneurysm occurs when an area of the abdominal aorta becomes enlarged or balloons out. The focal dilatations can measure 50% greater than the proximal normal segment, or >3 cm in maximum diameter. Major risk factors include men of advanced age, smoking, hypertension, and genetic factors. AAAs are classified by location as either suprarenal or infrarenal aneurysms. Most AAAs are asymptomatic and are often diagnosed accidently, symptomatic AAAs can present as lower back pain or pulsatile abdominal mass. The gold standard diagnostic test is an abdominal ultrasound and an aneurysm >5.5cm or rapidly expanding aneurysms require immediate surgery to avoid the risk or rupturing.

Diagnosing Axillary Lymphadenopathy

History taking is critical to the diagnostics of axillary lymphadenopathy and should include family, sexual and employment history. Close attention should be paid to local and regional lymph nodes as they may appear abnormal in size, consistency, or number. Patients over than 50 are at greater risk of conditions causing lymphadenopathy. Consistency in general should not be used to differentiate between benign and malignant causes. However, rock-hard nodes are seen more commonly in malignancy, whereas tender nodes often suggest an inflammatory disorder. In females, any enlarged lymph nodes within the axilla region, alongside any associated symptoms should be noted and referred to breast clinic, to be seen within 2 weeks to speed up diagnostic pathway. Axillary lymphadenopathy greater than two centimetres persisting for a period of more than six weeks with no obvious infective causes and progressively worsening adenopathy without any cause should also be referred urgently for further clinical investigation.

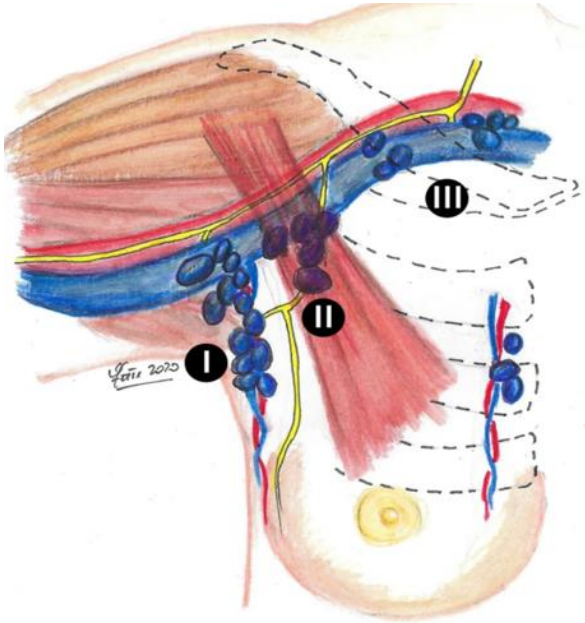

Image 2. Illustration of location of axillary lymph nodes.

The liver

Blood supply and lobes

The liver receives a blood supply from two sources. The first is the hepatic artery which delivers oxygenated blood from the general circulation. The second is the hepatic portal vein delivering deoxygenated, nutrient-rich blood from the small intestine. Blood drains out of the liver via the hepatic vein.

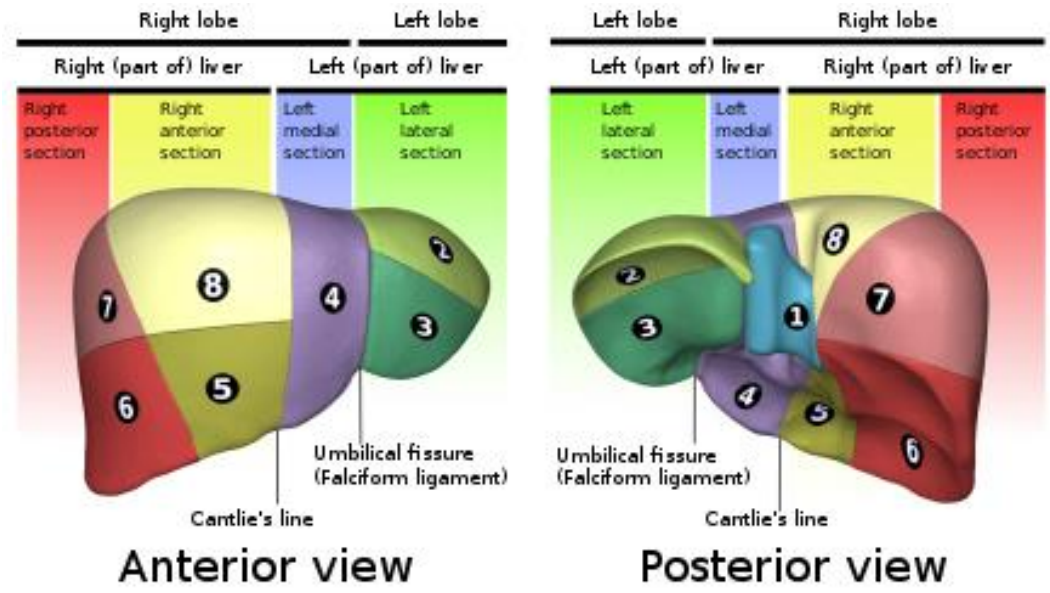

Image 3. Illustration of the lobes and anatomical segments of the liver.

The liver is divided into eight functionally independent segments within 4 lobes. Each segment has its own vascular inflow, outflow, and biliary drainage. In the centre of each segment there is a branch of the portal vein, hepatic artery, and bile duct. In the periphery of each segment there is vascular outflow through the hepatic veins. The 4 lobes are as follows:

- **Caudate lobe**

Segment I is the caudate lobe and is situated posteriorly. It may receive its supply from both the right and the left branches of portal vein. It contains one or more hepatic veins which drain directly into the inferior vena cava (IVC).

- **Left lobe**

Segments II and III lie lateral to the falciform ligament with II superior to the portal venous supply and III inferior. Segment IV lies medial to the falciform ligament and is subdivided into IVa (superior) and IVb (inferior).

- **Right lobe**

Segments V to VIII make up the right part of the liver:
Segment V is the most medial and inferior
Segment VI is located more posteriorly
Segment VII is located above segment VI
Segment VIII sits above segment V in the superio-medial position

- **Quadrate lobe**

The fissure for the round ligament of the liver (ligamentum teres) separates the medial and lateral parts of segment IV. The inferior medial segment (IVb) is also called the quadrate lobe.

Testicular tumours

There are two main types of testicular tumours are germ cell tumours (GCT) and stromal tumours. GCT are the most common type of testicular cancer accounting for 90% of testicular cancer.

The subtypes of GCT are seminoma (tumour marker: human chorionic gonadotropin), and nonseminomatous GCT (NSGCT). Both seminoma and NSGCT occur at the same rate.

Stromal tumours account for the remaining 5% of testicular cancers, there are two types: Leydig cell tumours and Sertoli cell tumours. Stromal tumours carry a good prognosis.

References

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