

Case 1 –78 male. Recurrent urinary tract infection. Suspicious bladder mucosa. Bladder biopsy.

Microscopy

Two bladder biopsies, not including deep muscle, showing partly denuded but normal urothelium overlying marked inflammation with the lamina propria comprising lymphoid follicles, and sheets of macrophages in which there are inclusions (Michaelis Gutman bodies). No dysplasia or invasive malignancy are seen. The features are of Malakoplakia.

Conclusion

Bladder biopsies – Malakoplakia

Extra Work

Confirm the inclusions with Von Kossa or Pas stain

Comments

Inclusions are caused by deposition of calcium and iron

Associated with recurrent UTI, especially E coli

Needs microbiology input

Benign condition

Case 2 –49 female. Very vascular pelvic tumour involving sigmoid mesentery. En block resection.

Microscopy

Sections comprise fascicles and sheets of pleomorphic spindle cells with eosinophilic cytoplasm, with associated large dilated blood vessels. Occasional multinucleated forms are identified, but necrosis is not seen. There are conspicuous mitosis (approximately 30/10hpf). The features are of a malignant spindle cell neoplasm with the differential, given the location, to include leiomyosarcoma which would be Trojan score 2-3(favoured) or gastrointestinal stromal tumour.

Conclusion

Tumour from sigmoid mesentery – Malignant spindle cell neoplasm favouring leiomyosarcoma

Extra work

Correlation with patient history and radiology

Further blocks to fully assess all criteria as per college dataset

Immuno panel

	SMA	Desmin	H-Caldesmon	S100	CD117	DOG1
Leiomyosarcoma	+	+	+	-	-	-
GIST	+/-	-	-	+	+	+

Comments (if leiomyosarcoma)

Needs referral to sarcoma unit

Needs correlation with radiology

Needs complete excision with margins as local recurrence and distant mets are common

Case 3 – 57 male. Chronic diarrhoea with blood and mucous. Two sessile polyps in rectum, largest 3mm

Microscopy

Colonic biopsies showing diamond shaped crypts, crypt drop out and some crypt architectural distortion, with proliferation of smooth muscle into the lamina propria. No inflammation, infection, dysplasia or invasive malignancy seen. The overall features are of rectal prolapse.

Conclusion

Rectal biopsies – Rectal prolapse

Extra work

None

Comments

Part of the solitary rectal ulcer syndrome, and most common site is the anterior wall of the rectum.

The features account for the blood and mucous but unlikely to be the reason for the diarrhoea

No polyp is identified in this case, but can be associated with adenomatous polyps

Case 4 – 56 male. Enlarged left testis. Orchidectomy.

Microscopy

Section of testis showing diffuse infiltration by single blue pleomorphic cells with little or no cytoplasm, some which are multinucleated, which either infiltrate round the seminiferous tubules or efface them. Conspicuous mitosis and apoptosis is identified, however necrosis is not seen. The features are of a high grade non-Hodgkin's lymphoma, the most common of which is diffuse large B cell lymphoma, and immunohistochemistry is required for characterisation.

Conclusion

Testis – Non-hodgkins lymphoma, favour diffuse large B cell lymphoma.

Extra work

Correlated with serology (can have raised LDH)

Immunohistochemistry (if DLBCL)

B cell lineage – CD20, CD79a

Negative for – CD3, CD23, CD5

Germinal centre – CD10 positive or Bcl6 and Mum1 positive

Non germinal centre – CD10 and Bcl6 negative and Mum 1 positive

Comment

Needs referral to haematopathologist and appropriate tertiary MDT

DLBCL is the most common type of lymphoma in the testis – 90%

5% of all testicular neoplasms are lymphoma, and the most common testicular neoplasm in over 60s

Needs local treatment – radiotherapy/ orchidectomy and systemic treatment (R-Chop)

Prognosis is dependent on stage, LDH and B symptoms

Case 5 – 66 female. U2 ? fibrocystic change or fibroadenoma. US guided breast biopsy

Microscopy

Breast core biopsies which are infiltrated by a predominately cribriform basaloid tumour with associated luminal secretions, in keeping with adenoid cystic carcinoma. No in-situ malignancy or microcalcification is seen. ER,PR and Her2 to be performed and supplementary report to follow.

Conclusion

Breast core biopsy – Adenoid cystic carcinoma, B5b

Extra work

To confirm adenoid cystic; luminal cells positive for Cd117 and myoepithelial cells p65 and CK5/6 positive

Secretions are PasD positive

Needs ER, PR and Her2 – usually triple negative

To correlate with radiology given the U2 impression in MDT setting

Comments

Rare tumour

Predilection for peri-neural invasion

Prognosis is very good and better than in other sites

Case 6 – 70 female. Blood stained nasal discharge for 2months, polypoid mass on nasal septum

Microscopy

Ulcerated fragments of nasal mucosa infiltrated by a poorly differentiated malignant neoplasm, composed of both spindle and epithelioid cells, with prominent nucleoli, multinucleated forms, associated melanin pigment and conspicuous mitosis. No surface dysplasia is identified. The features are of poorly differentiated neoplasm, the differential which includes malignant melanoma (favoured) or a sino-nasal undifferentiated carcinoma.

Conclusion

Nasal septum mass – poorly differentiated malignant neoplasm favouring malignant melanoma

Extra Work

Immuno:

	S100	Melan A	Pan C	CK7
Malignant Melanoma	+	+	-	-
SNUC	-	-	+	+

Need to correlate with history and radiology to assess if primary or secondary if melanoma

If Melanoma need BRAF testing

Discussion at ENT and Melanoma MDT

Comments (if melanoma)

Uncommon (<5%) of all sinonasal tumours

Usually low prevalence of BRAF mutations and more common mutations in C-Kit

Nasal melanoma very aggressive and hard to treat as complete excision difficult – 50% survival at 5 yrs

Case 7 – 22 female. Left ovarian cyst. Section from cyst wall.

Microscopy

Section of ovary in which there is a haemorrhagic cyst in which there are chorionic villi and fibrin in keeping with an ovarian ectopic pregnancy. No gestational trophoblastic disease is identified.

Conclusion

Left ovarian cyst – ectopic pregnancy

Extra Work

Need to contact referring consultant to inform them of the ectopic

Comments

Very uncommon location for ectopic pregnancy

Most usually involute spontaneously

Risk factors include pelvic inflammatory disease, previous pelvic surgery, IUD and use of progesterone pill

Case 8 – 33 female. Warty anal polyp from 11-3 o'clock. Biopsy of resected polyp

Microscopy

Sections show a well to moderately differentiated squamous cell carcinoma arising on a background of full thickness dysplasia (AIN3). The maximum depth of invasion on this section is 6mm, and the invasive component appears clear from the deep margin by 1mm. Dysplasia is seen reaching the diathermy margin and invasive malignancy appears to come within <0.5mm. There is no perineural or lymphovascular invasion.

Conclusion

Anal polyp – Squamous cell carcinoma on a background of AIN

Extra Work

Complete dataset and TNM with addition blocks and slides

Order p16 to confirm condyloma background

Discussion at MDT

Comments

Increasing incidence in North America and Europe due to HPV infection

Associated with immunosuppression including HIV

Case 9 – 56 female. Sarcoidosis. Mass above right eye. Skin biopsy

Microscopy

Skin biopsy with unremarkable epidermis and within the superficial dermis small groups and sheets of macrophages with finely vacuolated cytoplasm. No features of sarcoidosis is identified. Dysplasia or invasive malignancy is not seen. The features are of Xanthelasma.

Conclusion

Skin biopsy around eye - Xanthelasma

Extra Work

None

Comments

Usually occurs around the eyes, bilateral and removed for cosmetic reasons
Associated with hypercholesterolaemia

Case 10 – 73 Male. Pleural effusion and pleural nodularity. Biopsy from pleura

Microscopy

Pleural biopsy showing a papillary proliferation of atypical cells with infiltration of the underlying lung parenchyma, with associated necrosis and fibrin. Mitosis are not conspicuous, and normal mesothelial lining is not identified. The features are of a malignant papillary neoplasm, the differential of which includes mesothelioma (preferred) and a metastatic carcinoma with papillary architecture.

Conclusion

Pleural biopsy – Malignant papillary neoplasm favour mesothelioma

Extra work

Immunohistochemistry – Calretinin, WT1, and CK5/6 positive, TTF1 and BerEP4 negative in mesothelioma

Need to correlate with radiology and clinical history ? asbestos exposure

Discussion at lung MDT

No definitive surgical treatment, treated with radiotherapy

Comments

Mesothelioma is associated with occupational exposure to asbestos bodies

Medicolegal implications including claiming for compensation

Case 11 – 40 Male. Abdominal pain, anaemia. Gastric biopsies

Microscopy

Biopsies comprise gastric body type mucosa with a diffuse chronic and focally active inflammatory infiltrate of the lamina propria, including lymphoid aggregates and increased intra-epithelial lymphocytes. Infection (H. pylori) on H&E, intestinal metaplasia, dysplasia or invasive malignancy are not seen. The features are of lymphocytic gastritis.

Conclusion

Gastric biopsy – lymphocytic gastritis

Extra Work

Need to exclude H Pylori with giemsa

Comments

Lymphocytic gastritis can be associated with coeliac disease, lymphocytic colitis, crohns, HIV or drugs – need to be excluded, however 20% of cases are idiopathic

Case 12 – 67 male. Widespread solid and necrotic bladder tumour. TURBT.

Microscopy

Bladder biopsies, including deep muscle, show diffuse infiltration of the stroma by pleomorphic cells forming sheets and glands/ acini, with prominent nucleoli and inconspicuous mitosis. Perineural invasion is seen. The overlying urothelium is normal and CIS or features of typical transitional cell carcinoma are not seen. The features are of an adenocarcinoma, and the differential lies between prostate carcinoma involving the bladder (preferred), primary bladder adenocarcinoma or direct infiltration by adenocarcinoma from the colon.

Conclusion

Bladder TURBT – adenocarcinoma, favouring prostate adenocarcinoma

Extra work

Immuno:

	PSA	CK7	CK20	CDX2
Prostate	+	-	-	-
Bladder adenocarcinoma	-	+	+	-/+
Colonic adenocarcinoma	-	-	+	+

Review patient history including radiology to assess prostate

Discussion at MDT

Look up PSA level

If prostate cancer the Gleason 4+5, group grading 5

Need to assess radiology to determine if direct infiltration (T3) or infiltration through side, pelvic wall (T4)

Comment

Usually not amenable to surgical treatment given level of infiltration and grade

Treatment will be dependent on metastasis; needs staging CT and Bone scan. Radiotherapy +/- chemotherapy

Several trials in the UK at present looking at new drugs

Case 13 – 64 female. U3 breast lump, section from breast excision biopsy

Microscopy

Section of breast tissue showing apocrine metaplasia, sclerosing adenosis, benign microcalcification, and hyperplasia of usual type. No lobular neoplasia, DCIS or invasive malignancy seen. The features are of fibrocystic changes.

Conclusion

Breast excision biopsy – Fibrocystic changes

Extra Work

Correlate with radiology given the U3

Need to assess if the micro calcification is representative if screening patient

Comment

Benign condition

If radiology correlates patient can be reassured and discharge back to routine recall

Case 14 – 37 female. 90mm right ovarian cyst. Section from cyst wall.

Microscopy

Sections of ovarian cyst lined by broad-based papillae with fibrous or oedematous stroma and lined by stratified cuboidal to columnar cells, some showing hobnailing. The cells have eosinophilic cytoplasm with mild to moderate cytological atypia and mitosis are inconspicuous. Occasional psammoma bodies are found. Some of the papillae show hierarchical and complex branching without stromal invasion. The features are of a borderline serous tumour.

Conclusion

Right ovarian cyst – Borderline serous tumour

Extra Work

Need adequate sampling to assess for invasion (at least 1 section per cm)

Need to correlate with the other ovary (often bilateral), the omentum for invasive/ noninvasive implants and peritoneal washings for staging

Need to exclude sero-mucinous tumour through adequate sampling

Need discussion at MDT with radiology

Comment

Prognosis will depend on staging of capsular breach, omentum, peritoneal washing and other ovary

Invasive implants confer a worse prognosis

Case 15 – 66 female. Irregularly pigmented lesion right upper arm.

Microscopy

Skin excision showing within the dermis a well-defined but irregular highly cellular proliferation of spindle cells, without significant atypia, or conspicuous mitosis. At the deeper aspect there are cleft like spaces filled with blood, and the background shows dense haemorrhage with haemosiderin deposition. There is no necrosis. The overlying epidermis does not appear to be involved and appears benign. The overall features are of an aneurysmal dermatofibroma which appears completely excised in the section examined.

Conclusion

Skin excision right upper arm – Aneurysmal dermatofibroma

Extra work

Can be confirmed with immunohistochemistry – Factor XIIIa, Vimentin, CD68 positive

Comments

Common location, sex and age

Rapidly enlarging lesion due to haemorrhage

Often mistaken clinically as melanoma given rapid progression, colour, age and location

Case 16 – 55 female. Myosure excision of endometrial polyp

Microscopy

Sections comprise multiple pieces of endometrial polyp with inactive glands, and some fragments of smooth muscle with striking nuclear pleomorphism, but without mitosis or necrosis. No endometritis, hyperplasia, dysplasia, or invasive malignancy is seen. The features are of fragments of an atypical leiomyoma and endometrial polyp.

Conclusion

Myosure excision – endometrial polyp and atypical leiomyoma

Extra work

Make sure all is embedded and examined to exclude malignancy

Comment

Endometrial polyps without any hyperplasia or dysplasia are benign and need no further treatment

Atypical leiomyomas do not progress to leiomyosarcoma and do not metastasize, but can re-occur

Case 17 – 28 female. Excision biopsy of anterior abdominal wall mass.

Microscopy

Sections comprise skeletal muscle infiltrated by a bland spindle cell lesion composed of long interlacing fascicles which appear to encircle and entrap muscle bundles. The spindle cells have pale eosinophilic cytoplasm, very occasional mitosis (<2/10hpf), minimal atypia and no necrosis. No significant inflammation is identified, although foci of extravasated red bloods are seen. Given the morphological features, age of the patient and location the features are of fibromatosis which is incompletely excised in the section examined.

Conclusion

Excision biopsy anterior abdomen – Fibromatosis

Extra work

Need to confirm with immunohistochemistry – SMA and B-catenin positive

Comments

As incompletely excised risk of recurrence, can be locally aggressive but does not metastasise.

Can be associated with Gardner syndrome and therefore testing for APC gene mutation maybe reasonable

Case 18 – 48 female. Thy3f very hard thyroid. Hemithyroidectomy

Microscopy

Sections of thyroid show infiltration by a carcinoma with extensive papillary architecture, papillary nuclear features, psammoma bodies. No background thyroid tissue is included in the section examined, although there are dense aggregates of lymphoid cells. The features are of papillary carcinoma.

Conclusion

Thyroid – Papillary carcinoma

Extra work

Need to sample background thyroid to assess autoimmune thyroiditis which is commonly associated

Need to sample main lesion extensively (all in if <3cm, and 1-2 block per 1cm if larger) to exclude poorly differentiated or undifferentiated areas which will effect prognosis

Need to sample both lobes to exclude multi-focality which will effect prognosis

Minimum data set to be completed as per Royal College

Discussion at MDT

Review of previous cytology given the Thy3f

Need to assess level 6 and 7 neck nodes for metastasis

Comments

Papillary carcinoma can be multifocal or have poorly differentiated areas which will effect prognosis

Molecular testing for BRAF, RET and N-Ras can effect prognosis and treatment

Case 19 – 80 female. Abnormal CT scan. Colonoscopy reveals ? appendix stump. Biopsy from lesion

Microscopy

Colonic biopsy, showing at the deep aspect nests and small groups of bland cells with some intranuclear inclusions in keeping with a neuroendocrine tumour. No mitosis are identified. The background colonic mucosa appears unremarkable. The features are of a neuroendocrine tumour and immunohistochemistry will be performed for confirmation and grading.

Conclusion

Colonic biopsy – Neuroendocrine tumour

Extra work

Immuno; CD56, Chromogranin, Synaptophysin, MNF116 or Cam5.2, Ki67

Grade; difficult in this biopsy given the small size (need 2000 cells) however both the mitosis per 10hpf and Ki67 needed (G1 <2%, G2 2-20%, G3>20%)

Need discussion at MDT and correlate with radiology ? larger lesion

Comment

WHO have divided neuroendocrine tumours depending on functioning/non-functioning, size, spread and grade – which determines prognosis and any further treatment

If fit will need right hemicolectomy to remove

Case 20 – 66 male. PET avid right upper lobe nodule increasing in size. Smoker.

Microscopy

Section of lung tissue in which there is a well defined but encapsulated deposit of pink amorphous, acellular material with distinct cracking, and associated with mixed inflammation including multinucleated giant cells. There is no dysplasia or invasive malignancy seen. The features are of amyloid.

Conclusion

Right lung upper lobe – Amyloid

Extra work

Need to be confirmed with congo red

Needs correlation with clinical picture ? localised or systemic

Needs referral to national amyloidosis centre

Comment

Amyloid is a protein which has folded into a Beta-pleated sheet

Two major types AL and AA

Three patterns of disease in the lungs – septal, nodular and tracheobronchial; with different clinical prognosis