Session 1: General (Basic) Pathology Concepts

General Presentation Tips

• Come prepared
• Address audience not computer / screen
• Talk slowly and clearly and use mouse to point out salient features
  – Remember your classmates are trying to take notes on what you are saying
• History / PE / Lab slides:
  • Explain what the symptoms / PE findings / labs may mean
• Gross images – start with orientation in the body (anterior view, medial view, etc). Describe normal anatomy. Then describe pathology.
• Micro images – start with describing low or high power
  • Point out normal histology
  • Then proceed to describe pathology

Case 1

• A 56-year old patient with atrial fibrillation develops sudden-onset flank pain.
Identify the organ and key anatomic components. Compare and contrast the normal organ in A and the pathology in B.

Case 1 For your orientation

Identify the key histologic components. Compare and contrast the normal organ in A with the pathology in B.
Case 1

- What is the patient’s diagnosis?
- Explain the etiology and pathophysiology of this diagnosis.

Case 2

A 70 year-old man presents with chest pain on inspiration. He develops hemoptysis and dyspnea. He has a swollen leg. He has a known history of metastatic colon cancer.
Case 2

Identify the organ and key anatomic components. Compare and contrast the normal organ in A and the pathology in B.

Case 2

Explain the pathology seen in C and D.

Case 2 For your orientation
Identify the key histologic components. Compare and contrast the normal organ in A and the pathology in B.

Case 2

• What is the patient’s diagnosis?
• Explain the etiology and pathophysiology of the disease.

Case 2

• Compare and contrast the types of infarcts in Case #1 vs Case #2
Case 2

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hemorrhagic (Red) Infarct</th>
<th>Ischemic (White) Infarct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cause</td>
<td></td>
<td></td>
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<tr>
<td>Gross Shape</td>
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<tr>
<td>Necrosis</td>
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<td>Occlusion</td>
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<tr>
<td>Reperfusion</td>
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</tbody>
</table>

Case 3

- A 50 year-old Caucasian man presents with hepatomegaly, skin bronzing (hyperpigmentation), diabetes mellitus and arthritis.
- His vital signs are within normal limits.
- Laboratory studies show a fasting transferrin saturation >50%
- Genetic studies demonstrated a mutation in the HFE gene.

Case 3

Identify the organ and key anatomic components. Compare and contrast the normal organ in A and the pathology in B.
Case 3

Normal - Identify key histologic components.

Case 3

Identify key histologic components. Compare and contrast the normal organ in A and the pathology in B.

Case 3

- What is the patient’s diagnosis?
- Compare and contrast the different types of exogenous and endogenous pigment:
### Case 3

<table>
<thead>
<tr>
<th>Pigment</th>
<th>Exogenous / Endogenous</th>
<th>Color / Description</th>
<th>Location</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Heart, perinuclear</td>
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<td></td>
<td></td>
<td></td>
<td>Skin</td>
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<td></td>
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<td>Liver</td>
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</tbody>
</table>

### Case 3

<table>
<thead>
<tr>
<th>Pigment</th>
<th>Exogenous / Endogenous</th>
<th>Color / Description</th>
<th>Location</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lung/pleura</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Skin/dermis</td>
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</tbody>
</table>

### Case 4

A 45 year-old woman has white plaques on her cervix. She has had 5 children with no complications. A previous PAP smear showed inflammatory changes.
Case 4

Identify the organs and key anatomic components. Identify the organ and adaptive change in B.

Case 4

Identify the organ and key histologic components. Compare and contrast the normal organ in A and the adaptation in B.

Case 4

- What is the patient’s diagnosis?
- Explain the pathophysiology behind the changes.
Case 4

- Name and explain the 4 main types of adaptation of cellular growth and differentiation

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Hypertrophy</th>
<th>Hyperplasia</th>
<th>Metaplasia</th>
<th>Atrophy</th>
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</thead>
<tbody>
<tr>
<td>Definition</td>
<td></td>
<td></td>
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<tr>
<td>Effect on Organ</td>
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<tr>
<td>Types</td>
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<tr>
<td>Mechanisms</td>
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</table>

Case 5

A 40 year-old woman presents with a subcutaneous nodule in her left lateral thigh.

The nodule is non-tender, soft, movable and has been slowly growing for about 2 years.

The nodule is excised. Its cut surface is yellow and lobulated.
Case 5

Describe the gross pathology

Case 5

- Without knowing the histology or diagnosis, would you hypothesize that the lesion is benign or malignant?
- Why (based on specifics from history and gross description)?

Case 5

Identify the low and high lower image.
Describe the histologic findings.

A

B
Case 5

- What is the patient’s diagnosis?
- Compare and contrast characteristics of benign versus malignant neoplasms.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Benign</th>
<th>Malignant</th>
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</thead>
<tbody>
<tr>
<td>Differentiation and anaplasia</td>
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<tr>
<td>Rates of Growth</td>
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<td>Local invasion</td>
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<tr>
<td>Metastases</td>
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Case 6

- Name the organ
- Identify the relatively normal areas
- Identify the areas with pathology

Describe the findings highlighted by the arrows

Describe the findings (area in the square on the prior image)
Case 6

- What pathologic process do these findings represent?

Case 7

A 90 year old man with long history of sun exposure presents with a rapidly growing hemorrhagic mass on the left cheek

Case 7

Describe the physical exam findings.
Case 7
Identify the key histologic components. Compare and contrast the normal organ in A and the pathology in B.

Case 7
Describe the cytologic findings depicted by the arrows.

Case 7
Is this process benign or malignant? Why?
A 15 year-old female presents to the emergency department with right lower quadrant abdominal pain and vomiting for 12 hours.

Case 8

Identify the organ. Compare and contrast the normal organ in A and the pathology in B.

Case 8

Identify the key histologic components. Compare and contrast the normal organ in A and the pathology in B. What is the predominant inflammatory cell?
Case 8

- What is this patient’s diagnosis?
- Compare and contrast acute and chronic inflammation.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Acute</th>
<th>Chronic</th>
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<tbody>
<tr>
<td>Onset</td>
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<tr>
<td>Cellular infiltrate</td>
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<tr>
<td>Tissue injury /</td>
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<tr>
<td>fibrosis</td>
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<tr>
<td>Local and systemic</td>
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<tr>
<td>signs</td>
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