Neoplasia I: Tumor Nomenclature
Tumor Nomenclature Lecture Objectives

• Define neoplasia, and explain what makes a neoplastic cell different from a non-neoplastic cell.
• List several characteristics of benign and malignant tumors.
• Describe the one feature that can always be used to tell apart benign and malignant tumors.
• Explain how benign tumors are named.
• Explain how malignant tumors are named.
• List some malignant tumors that sound benign, and define hamartoma and choristoma.
• Memorize (sorry!) the tumor names in the chart at the end of this lecture.
Why do we need a lecture about neoplasia?

• To understand patients better
• To understand oral neoplasms better
• To nail the neoplasia questions on boards
• This lecture covers:
  • the nature of benign and malignant neoplasms
  • how neoplasms start and grow
• Later lectures will cover:
  • the nature of specific neoplasms
  • how these neoplasms affect the patient
Neoplasia Outline

I. Tumor nomenclature
II. Tumor characteristics
III. Epidemiology
IV. Genetic factors
Tumor Nomenclature Lecture Outline

- Definitions
- Benign tumors
- Malignant tumors
- Mixed tumors
- Confusing terms
Tumor Nomenclature Lecture Outline

• Definitions
Neoplasm = new (neo-) growth (-plasm)

- Excessive, autonomous cell growth
- Caused by genetic mutations
**Benign Tumors**
- Small
- Slow-growing
- Non-invasive
- Well-differentiated
- Stay localized

**Malignant Tumors**
- Large
- Fast-growing
- Invasive
- Poorly-differentiated
- Metastasize
Cancer = Latin for “crab”
The only indisputable quality of malignancy is **metastasis**!

Benign tumors CANNOT metastasize; malignant tumors CAN.

If it is metastatic, it MUST BE malignant.
Benign vs. Malignant

**BENIGN** (Leiomyoma)
- Small
- Well demarcated
- Noninvasive
- Nonmetastatic
- Slow growing
- Well differentiated

**MALIGNANT** (Leiomyosarcoma)
- Large
- Poorly demarcated
- Rapidly growing with hemorrhage and necrosis
- Locally invasive
- Metastatic
- Poorly differentiated
Tumor Nomenclature Lecture Outline

• Definitions

• Benign Tumors
Meet the only guy who changes his identity more often than his underwear.

Fletch.
Until last week, he was just another mild-mannered reporter fighting for truth, justice and a window office.

Now he's being threatened, shot at, accused and arrested. And that's by the people he's trying to help.

But there's still one thing even more dangerous than his work.

His love life.

CHEVY CHASE

Fletch

MICHAEL RITCHIE

DANIEL GLASSMAN

JUDITH ANN BAKER

DAVID WHEELER

NICHOLSON

RICHARD LIBERTINI

KAREEM ABDUL-JABBAR

TIM MATRESON

ANDREW BERGMAN

RICH GREGORY

MICHAEL MCCARTHY

PETER DOUGLAS

ALAN GREGORY

MICHAEK RITCHIE

UNIVERSAL

PRODUCTION COMPANY
"He has melanoma...carcinoma...some kind of noma."

Dr. Rosenpenis
Benign Tumors

Usually designated by adding “-oma” to cell type
• adenoma: benign tumor of glandular cells
• leiomyoma: benign tumor of smooth muscle cells
• chondroma: benign tumor of chondrocytes

Other benign tumor names
• papilloma: has finger-like projections
• polyp: projects upward, forming a lump
• cystadenoma: has hollow spaces (cysts) inside
Thyroid adenoma
Thyroid adenoma
Papilloma
Cystadenoma
Cystadenoma
Tumor Nomenclature Lecture Outline

• Definitions
• Benign tumors
• Malignant tumors
Malignant Tumors

Carcinomas arise in epithelial tissue
  • adenocarcinoma: malignant tumor of glandular cells
  • squamous cell carcinoma: malignant tumor of squamous cells

Sarcomas arise in mesenchymal tissue
  • chondrosarcoma: malignant tumor of chondrocytes
  • angiosarcoma: malignant tumor of blood vessels
  • rhabdomyosarcoma: malignant tumor of skeletal muscle cells
Adenocarcinoma
Squamous cell carcinoma
Chondrosarcoma
Rhabdomyosarcoma
Tumor Nomenclature Lecture Outline

• Definitions
• Benign tumors
• Malignant tumors
• Mixed tumors
Mixed Tumors

Mixed tumors contain two or more different types of cells.

- pleomorphic adenoma: glands + fibromyxoid stroma
- fibroadenoma: glands + fibrous tissue
Pleomorphic adenoma
Tumor Nomenclature Lecture Outline

• Definitions
• Benign tumors
• Malignant tumors
• Mixed tumors
• Confusing terms
Confusing Terms

Malignant tumors that sound benign
- lymphoma
- mesothelioma
- melanoma
- seminoma

Non-tumors that sound like tumors
- hamartoma: mass of disorganized indigenous tissue
- choristoma: heterotopic rest of cells

Names that seem to come out of nowhere
- nevus
- leukemia
- hydatidiform mole
Summary

- Neoplasm
  - Benign
  - Malignant
    - Carcinoma
    - Sarcoma
Summary

Neoplasm

Benign
- adenoma
- angioma
- rhabdomyoma

Malignant
- Carcinoma
- Sarcoma
Nomenclature

- Neoplasm
  - Benign
  - Malignant
    - Carcinoma
    - Sarcoma

- squamous cell carcinoma
- adenocarcinoma
Nomenclature

- Neoplasm
  - Benign
  - Malignant
    - Carcinoma
    - Sarcoma
      - angiosarcoma
      - rhabdomyosarcoma
## Tissue of origin

<table>
<thead>
<tr>
<th>Tissue of origin</th>
<th>Benign</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibrous tissue</td>
<td>Fibroma</td>
<td>Fibrosarcoma</td>
</tr>
<tr>
<td>Fat</td>
<td>Lipoma</td>
<td>Liposarcoma</td>
</tr>
<tr>
<td>Cartilage</td>
<td>Chondroma</td>
<td>Chondrosarcoma</td>
</tr>
<tr>
<td>Bone</td>
<td>Osteoma</td>
<td>Osteogenic sarcoma</td>
</tr>
<tr>
<td>Blood vessels</td>
<td>Hemangioma</td>
<td>Angiosarcoma</td>
</tr>
<tr>
<td>Mesothelium</td>
<td></td>
<td>Mesothelioma</td>
</tr>
<tr>
<td>Hematopoietic cells</td>
<td></td>
<td>Leukemia</td>
</tr>
<tr>
<td>Lymphoid cells</td>
<td></td>
<td>Lymphoma</td>
</tr>
<tr>
<td>Squamous epithelium</td>
<td>Squamous cell papilloma</td>
<td>Squamous cell carcinoma</td>
</tr>
<tr>
<td>Glandular epithelium</td>
<td>Adenoma</td>
<td>Adenocarcinoma</td>
</tr>
<tr>
<td></td>
<td>Papilloma</td>
<td>Papillary adenocarcinoma</td>
</tr>
<tr>
<td></td>
<td>Cystadenoma</td>
<td>Cystadenocarcinoma</td>
</tr>
<tr>
<td>Smooth muscle</td>
<td>Leiomyoma</td>
<td>Leiomyosarcoma</td>
</tr>
<tr>
<td>Skeletal muscle</td>
<td>Rhabdomyoma</td>
<td>Rhabdomyosarcoma</td>
</tr>
<tr>
<td>Melanocytes</td>
<td>Nevus</td>
<td>Melanoma</td>
</tr>
</tbody>
</table>
Which of the following describes a benign tumor arising from skeletal muscle?

A. Leiomyoma
B. Papilloma
C. Rhabdomyoma
D. Leiomyosarcoma
E. Rhabdomyosarcoma