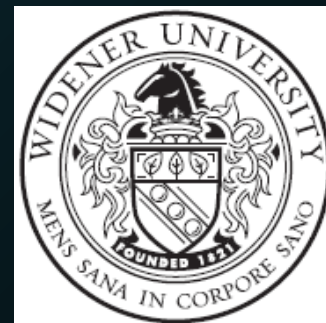




Inflammation to Cancer: GERD & Barrett's Esophagus

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Objectives

Following participation in this presentation, the learner will:

- Discuss inflammatory cascade and the link to the development of a malignancy;
- Apply A&P knowledge of gastroesophageal (GE) junction to the symptoms, diagnostic findings and disease development;
- Compare/Contrast EBP treatment modalities for GERD/Barrett's esophagus.



GERD: A “Hot” Topic

- Set the table with epidemiology;
- Provide the essentials with A&P:
 - The inflammatory response
 - Esophageal A&P
- The entrée with GERD, BE & EC;
- The desert: treatment and survival.

Definitions

- Gastroesophageal reflux Disease (GERD)
- Barrett's esophagus (BE)
- Esophageal cancer (EC):
 - US: Barrett's esophagus adenocarcinoma (BEA);
 - Japan: >90% squamous cell carcinoma but is a changing'.
 - Different definitions in US, Great Britain & Japan.



Incidence of GERD & Esophageal Cancer

- GERD estimated to affect 30 to 60 million in US, costing 10 billion annually.
- 7% of population have daily sx; 14% weekly, 44% monthly and most self-medicate.
- Barrett's esophagus (BE) estimated to affect 17 million in US.
- Esophageal cancer (EC) fastest growing cancer by incidence (NCI).
- 500% ↑ incidence of EC since 1970's.
- EC has a 5-year survival rate 17%.



A Global Look at Inflammation

Signs of Inflammation

 Redness

 Heat

 Swelling

 Pain

 Loss of Function

#1 Inflammatory Vascular Response

🔥 Vasoconstriction



Vasodilation

🔥 Exudate

🔥 WBC movement

#2: Inflammatory Biochemistry

Chemical Mediators

Cytokines

Chemokines

Interleukins (IL-,1, 6 & 8)

Platelet-Activating Factor

Reactive oxygen species

Tumor Necrosis Factor



#3: The Cellular Players: Overview



The Cellular Players

Agranulocytes

- **Monocytes/ Macrophages**

Granulocytes

- **Neutrophils**
- **Basophils**
- **Eosinophils**
- **Platelets**



Inflammation: Pulling It All Together



The Cellular Esophagus



The Work of the Esophagus



Anatomically At Risk: GE Junction

- Different neighbors:
 - Esophagus:
 - Squamous epithelium
 - Solid layers
 - Stomach:
 - Columnar epithelium
 - Nooks & crannies



The GE Junction Gross Anatomy



Cells Are in Constant Flux

Hypertrophy

Atrophy



Pushing the Cells: Hyperplasia

Adding of cells.



Keep Pushing: Metaplasia

Cell conversion.



The Cancer Jump: Dysplasia

Cellular replacement with abnormal cells.



The Result of GERD Chemistry



Long-Term Exposure



Barrett's Esophagus

EBP: Risk(s) for Barrett's Esophagus

- GERD incidence:
 - 25-30% of west; Chinese 9.3% Bai et al, (2013);
- ∅ Age, gender, race, vitamin & education;
- + omega-3, fiber & plant-based fat (Kubo);
- SR inconclusive for BMI (Seidel et al, 2009);
- Obesity: ∅ GERD, suggestive for BE (Veugelaers et al, 2006); SR/MA: Lowest & highest pack-years (smoking) associated with ↑ risk (Andrici et al, 2013); SR/MA: ↑ risk GERD, BE & EC (Hampel et al, 2005).



Lifestyle Changes

Foods to avoid:

- Chocolate
- Coffee/Tea
- Peppermint
- Alcohol
- Fatty foods
- Acidic juices (orange; tomato)
- Carbonated beverages



Medical Management

- Educational priorities
- Proton-pump inhibitors
- Endoscopy



Surgical Management

- Superficial treatment
- Radiofrequency ablation
- Fundoplication
- Esophagectomy

References

