Inflammation to Cancer: GERD & Barrett’s Esophagus

International Conference of Peranesthesia Nurses (ICPAN)
Copenhagen, Denmark

Kim A. Noble, Ph.D., RN, CPAN
kanoble@mail.widener.edu
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 is a changing'.
  • Different definitions in US, Great Britain & Japan.
Incidences 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
- Exudate
- WBC movement
- Vasodilation
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);

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