UPDATE ON POSTMENOPAUSAL BLEEDING

Marcia C. Javitt, MD FACR
Director of Medical Imaging
Rambam Healthcare Campus, Haifa, Israel
Section Editor for Women’s Imaging
American Journal of Roentgenology

DISCLOSURE

• Dr. Javitt is an educational consultant for Bayer HealthCare Pharmaceuticals

Learning Objectives

• Learn the normal and abnormal appearances
• Recognize focal vs diffuse E abnl
• Understand DDx polyps, fibroids, hyperplasia, and cancer
• Learn proper triage to SHG, E Bx & hysteroscopy for tissue sampling

What is PMB?

• Spontaneous vaginal bleeding that occurs ≥ one year after the date of the last menstrual period

TVUS for PMB

• Safe
• Cost effective
• Widely available
• Noninvasive
• Operator dependent

The Normal Postmenopausal Uterus

• Measure in the sagittal plane AP
  – Normal: Thin homogeneous basal bilayer <5mm
• Variables:
  – age
  – HRT
  – tamoxifen
  – clinical history
  – physical findings

© 2015 Marcia C. Javitt, MD

© 2015 Marcia C. Javitt, MD

© 2015 Marcia C. Javitt, MD

© 2015 Marcia C. Javitt, MD

© 2015 Marcia C. Javitt, MD

© 2015 Marcia C. Javitt, MD
SRU Sponsored Consensus Conference (Oct. 2001)

- Evaluate PMB with TVUS or E Bx
- ET ≤5mm: 1% chance of ECA
  - If NO focal thickening!
  - No sampling required
  - Sensitivity to detect ca 98%
- NPV 99%
- PPV for endometrial abnormality 87%

Postmenopausal Bleeding

<table>
<thead>
<tr>
<th>ETOLOGY</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrophy</td>
<td>60-80%</td>
</tr>
<tr>
<td>HRT</td>
<td>15-25%</td>
</tr>
<tr>
<td>Polyps</td>
<td>2-12%</td>
</tr>
<tr>
<td>Endometrial Cancer</td>
<td>10%</td>
</tr>
<tr>
<td>Hyperplasia</td>
<td>10%</td>
</tr>
<tr>
<td>Cx Ca</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Misc. (fibroids, cervicitis, atrophic vaginitis, tamoxifen, trauma, anticoagulation)</td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

PMB: Triage by US

- US (thickness, texture)
  - triage → SHG, Bx, D&C, Med mgmt, surveillance US
- Any patient with PMB and
  - Endometrium >5mm
  - Endometrial heterogeneity
  - Focal thickening
  - SHOULD GET SHG, BIOPSY, OR HYSTEROSCOPY

PMB: Triage by US

- NPV: 98%
- PPV: 30%
  - TVUS SENS OF >5mm E for detection of ECA

<table>
<thead>
<tr>
<th>MODALITY</th>
<th>SENSITIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVUS &gt;5mm</td>
<td>96%</td>
</tr>
<tr>
<td>Non-focal Bx</td>
<td>87%</td>
</tr>
<tr>
<td>SHG</td>
<td>89%</td>
</tr>
<tr>
<td>Hysteroscopy</td>
<td>86%</td>
</tr>
</tbody>
</table>

Sonohysterography

- Focal versus diffuse processes
  - Endometrial biopsy vs hysteroscopically guided biopsy
  - Focal: polyps, fibroids, focal hyperplasia, focal endometrial carcinoma, synchiae
  - Diffuse: diffuse hyperplasia, diffuse carcinoma
  - Both focal and diffuse processes may coexist
- Contraindications: PID, Cx stenosis, Pregnancy
- Complications: flare of PID, pain, uterine perforation, failed cannulation, spill of tumor cells into the peritoneum (theoretical)
Sonohysterography

- Hysteroscopy permits directed tissue sampling
- SHG and hysteroscopy: 80% sensitivity for polyps
- 2D TVUS misses up to half of polyps
- Blind Bx → fragmentation → ??difficulty w/Dx
- Risk of malignancy increased 7x if difficulty with distention at SHG


Polyps

- Hyperplastic from basal layer, glands, stroma
- Sx: Vaginal bleeding, Mucous d/c; no correl w/ size or #
- Risks: age, obesity, HBP, tamoxifen, infertility
- Prevalence: 8 - 35% (10% @ autopsy-Callen )
- Prevalence of malignancy increases w/age & size

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40 yrs</td>
<td>3.7%</td>
</tr>
<tr>
<td>40 – 59 yrs</td>
<td>3.11%</td>
</tr>
<tr>
<td>&gt; 60 yrs</td>
<td>5.36%</td>
</tr>
</tbody>
</table>


Fibroids

- Prevalence:
  - 25% of Caucasian women
  - 50% of African American women
- Usually hypechoic, may distort endometrium
- DDX polyps

- Intracavitary versus submucous
  - Submucous > 50% covered by endometrium
  - Hysteroscopy shows only intracavitary portion
  - Submucous: removal results in synechiae possible uterine perforation unless more than half the volume is within the endometrial canal
- Assess the depth of the intramural portion on SHG

Hyperplasia

- Thickened endometrium (stroma and glands)
- Spectrum from glandular atypia to neoplasm
- Types: cystic, adenomatous, atypical
- Up to 33% of ECA preceded by hyperplasia

Hyperplasia

- Imaging Appearance:
  - Diffuse
    - Polypoid echogenic luminal masses
    - Both hyperplasia and cancer may be hypervascular
    - Simulate cancer: irregularity, asymmetric thickening
  - Ca usually >10mm, thickened, irregular, may disrupt inner myometrial layer
  - DDX: blood clots, hyperplasia, atypia, and carcinoma look identical
  - Biopsy is usually required especially if focal

Endometrial Carcinoma

- New cases 2015: 54,870
- Deaths 2015: 10,170
  - Incidence up 2.4% per year 2007 - 2011
  - Death rate increased by 1.9%/year 2007 - 2011
- Peak in 6th and 7th decades of life (avg 60 yrs)
- Signs/Sx: vag bleeding (75%PMB), pain
- 20% pre- or peri-menopausal @ presentation

FIGO STAGING ENDOMETRIAL CA

<table>
<thead>
<tr>
<th>STAGE</th>
<th>EXTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>CTS</td>
</tr>
<tr>
<td>IA</td>
<td>Confined to Uterus ≤50% myometrial invasion</td>
</tr>
<tr>
<td>IB</td>
<td>Confined to Uterus &gt;50% myometrial invasion</td>
</tr>
<tr>
<td>IIA</td>
<td>CA Stromal Invasion</td>
</tr>
<tr>
<td>IIIA</td>
<td>Extension to Serosa or Adnexa</td>
</tr>
<tr>
<td>IIIB</td>
<td>Extension to Vagina or Parametria</td>
</tr>
<tr>
<td>IIC</td>
<td>Pelvic Adenopathy</td>
</tr>
<tr>
<td>IIC2</td>
<td>Paraaortic Adenopathy (+/−Pelvic Adenopathy)</td>
</tr>
<tr>
<td>IVA</td>
<td>Extension to Bladder or Rectum</td>
</tr>
<tr>
<td>IVB</td>
<td>Distant Metastases, Malignant Ascites, Peritoneal Tumor</td>
</tr>
</tbody>
</table>
Endometrial Carcinoma

- **US findings**
  - Diffuse: thickened endometrial lining
  - Texture heterogeneous
  - Focal: irregularity
  - Distortion of myometrial interface
    - Disrupted subendometrial halo when invasive

- **Disrupted subendometrial halo when invasive**

Endometrial Carcinoma

**Limitations**

- Blind endometrial biopsy can
  - Sample only 40 - 50% of the endometrium with D&C
  - Inadequate tissue 16%, Sens 84%, Spec 99%, NPV 94%
- Hysteroscopy is the gold standard
- Endoluminal masses require guided biopsy procedure

**PRINCIPLES OF EVALUATION OF PMB**

- Endometrial CA is common in USA
- Most patients are diagnosed early with favorable prognosis
- Risk factors have been identified
- Routine screening is not cost-effective (ACOG)
- Tamoxifen patients should be counseled about risks and alerted to seek attn for PMB

**GUIDELINES FOR INVESTIGATING PMB**

- Identify patients at risk for endometrial CA
- Exclude or Identify Endometrial Pathology
- Early Detection of Endometrial CA

**RESULT:**

- TVUS (noninvasive, morphology, thickness)
- SHG
- Hysteroscopy and Biopsy

**Principles of Evaluation of PMB**

- Measure E bilayer thickness
  - >5mm Bx or SHG
- Diffuse or Focal?
  - Focal → SHG & or hysteroscopy even if Ebx (-)
  - D&C (prefer w/ hysteroscopy) if no office Bx