POSTMENOPAUSAL OVARIAN CYSTS: HOW TO ASSESS AND WHAT TO DO

Steven R. Goldstein, MD
Professor of Obstetrics and Gynecology
Director of Gynecologic Ultrasound
Co-Director, Bone Densitometry
New York University School of Medicine
New York, New York
Information obtained with advancingly refined technology cannot simply be handled according to old established principles. New studies must be performed before clinical recommendations may be made.
TRANSVAGINAL ULTRASOUND
“SONOMICROSCOPY”

• Must be careful not to over interpret such findings that may be much more common and less ominous than previously believed. Further study warranted!
BUT FIRST...

...the perfunctory introduction to menopause and “normal” (or rather) “expected” findings
MENOPAUSE

Defined as the FINAL menstrual period (obviously retrospective Dx)

A patient is considered menopausal after cessation of menstruation for at least 12 months due to a depletion of ovarian follicles.
Climacteric

The phase in the aging process that marks the transition from the reproductive stage of life to the non-reproductive stage (not always linear or smooth)
POST MENOPAUSAL OVARIES
ANATOMY OF A POSTMENOPAUSAL OVARY

- Folliculogenesis ceases
- Tunica albuginea becomes very dense causing the surface of the ovary to become scarred and shrunken
- Eventually ovary is inert, consisting mainly of connective tissue, clings to posterior leaf of the broad ligament
- Can no longer be palpated on bimanual exam (basis for Barber’s thesis)
OVARIAN ANATOMY AND ULTRASOUND: PREMENOPAUSE

- Sonolucencies of follicles make visualization relatively simple
- When a women assumes lithotomy, freely mobile premenopausal ovary is lateral to uterus and easily seen on vaginal probe ultrasound immediately adjacent to the pelvic side wall (iliac artery and iliac vein)
OVARIAN ANATOMY AND ULTRASOUND POSTMENOPAUSE

- Lack of normal folliculogenesis (no sonolucencies)
- Does not reach pelvic sidewall, therefore iliac vessels not so helpful in identification
- Loops of bowel everywhere
LINGERING QUESTION:

WILL THE LACK OF A NORMAL OVARY ON ULTRASOUND BE AS REASSURING AS DEFINITIVELY LOCATING IT AND SEEING IT TO BE ATROPHIC?
Postmenopausal ovaries: Detection and Diagnosis

- 82% of ovaries seen; all abnormal ones were seen
- Mean surgical diameter of non-visualized ovaries: 7.3mm (5-12mm)
- No ovaries with normal ultrasound were abnormal at surgery
- One microscopic Brenner tumor; ovary appeared grossly normal at TVU and to the eye

MENOPAUSAL OVARIES: WHY DO WE CARE?

- OVARIAN CANCER: DEADLY DISEASE
## 2010 Cancer Statistics (ACS Estimate)

<table>
<thead>
<tr>
<th>Location</th>
<th>New Cases</th>
<th>Deaths</th>
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</thead>
<tbody>
<tr>
<td>Uterus</td>
<td>39,080</td>
<td>7,400</td>
</tr>
<tr>
<td>Cervix</td>
<td>11,150</td>
<td>3,670</td>
</tr>
<tr>
<td>Ovary</td>
<td>22,430</td>
<td>15,280</td>
</tr>
</tbody>
</table>
So what about simple cystic masses either palpated or discovered incidentally?

Where are we today and how did we get here?
PPMO (Palpable Post Menopausal Ovary) Syndrome
Barber and Graber *Obstet Gynecol* 1971;38:921

“An ovary that would be considered normal sized in a premenopausal women should be considered abnormal in a postmenopausal women…”
PPMO (Palpable Post Menopausal Ovary) Syndrome
Barber and Graber Obstet Gynecol 1971;38:921

“... and probably harbors a tumor not necessarily malignant but not functional or dysfunctional.”
PPMO Revisited

“Patients with palpable postmenopausal ovary syndrome should not be followed of re-evaluated but must be investigated promptly for the presence or absence of an ovarian tumor…”
PPMO Revisited

“... the only method of diminishing the mortality from ovarian cancer is the acceptance of more liberal indications of surgery.”

Barber, 1984
The Postmenopausal Cystic Adnexal Mass: The Potential Role of Ultrasound in Conservative Management

STEVEN R. GOLDSTEIN, MD, BALA SUBRAMANYAM, MD, JON R. SNYDER, MD, UZIEL BELLER, MD, B. NAGESH RAGHAVENDRA, MD AND E. MARK BECKMAN, MD
CONCLUSIONS

“We concluded that small (≤5 cm) unilocular, unilateral postmenopausal adnexal cystic masses, with no septations or ascites will have a very low incidence of malignant disease…”
CONCLUSIONS

“...therefore serial ultrasound follow-up without surgical intervention may play a role in clinical management of such patients.”
Hall and McCarthy (JUM, 1986;5:503)

- 13 postmenopausal cysts (only 10 unilocular)
- One borderline malignancy (3.5 cm simple cyst)
- Incidence = 8% of total, 10% unilocular
- “… the simple postmenopausal adnexal cyst may not necessarily be an ominous finding.”
Rulin and Preston (Obstet Gynecol 1987;70:578)

- 4 year experience with adnexal masses
- Of 33 < 5 cm, one 3 cm endometrioid cancer
- “… our findings cast doubt on the concept that all postmenopausal women with minimally enlarged ovaries should undergo laparotomy.”
ULTRASOUND AND ADNEXAL CYSTS

• 85% of ovarian tumors are epithelial. Most will have some cystic component.

• Cystic structures are easily visualized on ultrasound.
Definition of a Simple cyst

- Wall <3mm thick and regular
- Clear fluid
- Round smooth wall
- Unilocular
- I.e., looks like a follicle
ADNEXAL CYSTS in Postmenopausal women
Levine, Gosink, Wolf et al, (Radiology, 1992;184:653)

- 184 women with 358 ovaries, 137 uteri
- 17.3% simple adnexal cysts at initial exam (range 0.4 – 4.7 cm)
- Of these 58% were 1.0 cm or less, 90% were 3.0 cm or less
Cysts < 10 cm in asymptomatic post menopausal women > 50 years

- Unilocular cysts in 3.3% (256 of 7705)
  - 49% resolved in 60 days, 51% persisted
  - 45 women operated, none malignant
- (32 cystadenomas)

SIMPLE POSTMENOPAUSAL CYSTS ARE NOT MALIGNANT


• > 25,000 women screened annually over an 18 year period
• 3746 postmenopausal women with 6513 unilocular cystic ovarian masses
• Followed at 3-6 month intervals with TV U/S without surgery
• Mean duration of follow-up 4.6 years (range 4 mos -16.5 years)
• No patient in this group has developed ovarian cancer
CONCLUSIONS: ADNEXAL CYSTS IN PM WOMEN

1) NOT ALL CYSTIC ADNEXAL STRUCTURES ARE OVARIAN IN ORIGIN

2) NONE OF WHAT WE SEE (AT LEAST THOSE WITH SURGICAL CONFIRMATION) ARE “FUNCTIONAL” OR “PHYSIOLOGIC” CYSTS

3) VAGINAL PROBE WILL IDENTIFY MANY SMALL SONOLUCENCES (6-18%)
WHAT ABOUT NOT SO SIMPLE CYSTS?????
ISOLATED MURAL NODULE WITH NO FLOW
ISOLATED MURAL NODULE WITH NO FLOW: CYSTADENOFIBROMA

- (Abstract presented at AIUM, 4/09 in NYC): 69% of pathology reports for “cystadenofibroma” had this pathognomonic appearance…
UNILOCULAR OVARIAN CYSTS

• As already discussed now well established that UNILOCULAR Ovarian cysts in Post menopausal women (and CERTAINLY in premenopausal women) are felt to be benign and NO LONGER come to routine surgical exploration.
HOWEVER...

- Solid components and/or mural nodules (especially if papillary) contained within cystic structures have been felt to be an ominous sonographic finding and have virtually always resulted in surgical removal.
CYSTADENOFIBROMAS

- Benign ovarian neoplasms that originate from the surface epithelium as well as underlying cortical connective tissue of the ovary.
Cystadenofibromas

- Often have solid areas that appear to be papillations coming off the cyst wall ("mural nodules") and thus have almost always been removed to exclude malignancy.
We undertook the study to determine if any consistent finding of cystadenofibroma could be discerned sonographically...
... thereby increasing the negative predictive value of TV U/S and color flow Doppler in identifying them as benign and potentially decreasing surgical intervention
METHODS AND MATERIALS

- Over a 6 year period 58 cases of pathologically proven cystadenofibromas were identified from our pathology department database.
- Of these 32 had TV U/S with color flow Doppler in our Ob/Gyn ultrasound unit.
- Images were analyzed for presence of features beyond simple cystic appearance, and presence or absence of blood flow.
RESULTS

- Average age = 51 years (range 24-82)
- 18/32 (56%) < 50 y/o
- 14/32 (44%) > 50 y/o
- 5/32 (16%) Bilateral of which 2 had a focal borderline malignant serous component (ages 45, 73)
RESULTS

- 22/32 (69%) of these cystadenofibromas presented as unilocular cystic structures with one or more solid mural nodules projecting from the cyst wall. None of these displayed any discernable blood flow within the solid area.
RESULTS

• 2 of these 22 were read as “mucinous cystadenofibromas”
RESULTS

- 10/32 (31%) were multilocular with variable solid areas and did not follow this more typical appearance
CONCLUSIONS

1. Not all cystadenofibromas will look the same on TV U/S and color flow Doppler

2. The majority (69% in our series) presented as unilocular cysts with a solid non vascular projection(s) from the cyst wall. Of these 2 (9%) were mucinous, 20 (91%) serous

3. This particular presentation was virtually pathognomonic and when present seemed to have reliability for benign cystadenofibroma that was 100% in this small series
CONCLUSIONS (cont)

- Of the “non typical” appearances 2 (20%) had surface areas of borderline serous tumors
- Further study to corroborate this observation is necessary
ANALOGY..???

Perhaps similar to ultrasound appearances of endometriomas...some are “classic” but not ALL endometriomas will ALWAYS have that classic look...
IN SUMMARY

- PM OVARIES ARE NOT SO EASILY SEEN
- SIMPLE CYSTS OF PM OVARIES ARE EASILY SEEN, PRESENT IN 6-18% OF WOMEN AND INVARIABLY BENIGN
- CYSTADENOFIBROMAS ARE BENIGN OVARIAN LESIONS. APPROXIMATELY 70% WILL HAVE A PATHOGNEUMONIC APPEARANCE AS A SIMPLE CYST WITH ONE OR MORE SMALL SOLID NODULES WITH NO DISCERNABLE FLOW ON DOPPLER