Ultrasound diagnosis of endometriosis

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The role of transvaginal ultrasound in the diagnosis and management of endometriosis

- Discriminate endometriomas from other lesions
- Other sites than the ovaries affected (DIE)?
- Provide information for choice of treatment
  - Medical or surgical treatment
  - Laparoscopic surgery or laparotomy
    - surgeon with special skills?
      - bowel resection?
    - ureteral stents?
Typical endometrioma

51% (416/713) of 713 endometriomas had this appearance

Typical endometrioma

Wall nodularity
Atypical endometriomas
Atypical endometrioma
- atypical internal echogenicity
Endometrioma with fluid level

Dermoid

Endometrioma
Atypical endometrioma
- retracted blood clots
Atypical endometrioma - blood clots?

Leuven
Atypical endometrioma – bi- or multi-locular
Atypical endometrioma – calcified
Atypical endometrioma

15 x 9 x 8 cm
Decidualized endometrioma in pregnancy

From Fruscella et al UOG 2004; 24: 578
Endometrioma with endometroid and clear cell cancer

Malignancy in 0.3 – 0.8% of endometriotic lesions
Summary

Typical endometrioma
- Unilocular, ground glass, +/- nodule

Atypical endometrioma
- NOT ground glass
- Bi- or multi-locular
- Retracted blood clots
- Papillary projections, vascularized
- Calcified lesions
- Completely atypical
Sensitivity and specificity of ultrasound for diagnosing endometrioma

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity, %</th>
<th>Specificity, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valentin -99</td>
<td>92</td>
<td>97</td>
</tr>
<tr>
<td>Van Holsbeke -10</td>
<td>81</td>
<td>97</td>
</tr>
<tr>
<td>Others</td>
<td>43 - 84</td>
<td>89 - 100</td>
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</tbody>
</table>
When an endometrioma is found...

- Fixed or freely movable?
- Signs of extraovarian endometriosis (deep infiltrating endometriosis, DIE)?
  - Difficult surgery?
- 93% of women with DIE in one location have DIE also in other locations
- Adenomyosis?
Adenomyosis

Enlarged uterus
"Hypoechoic linear striations"
"Rain in the forest"

Cysts in the myometrium
Adenomyosis

Enlarged uterus
”Rain in the forest”
Adenomyosis

Poorly defined endometrium
Adenomyosis

**Best criterion?**
cystic spaces
AND
hypoechoic linear striations

Sensitivity 0.90
Specificity 1.00
LR+ -
LR - 0.1

Conclusive diagnosis

*Bazot et al 01, 02*
Sites typically involved in extraovarian endometriosis
What do endometriotic nodules look like?

- Hypoechoic
- Diffuse borders
- Firm and tender when pushed upon
- Poorly vascularized
- Bowel endometriosis = Indian head sign
- Bladder endometriosis
  - Dome or base
  - Round or comma shaped
Endometriosis with adhesions to bowel

Kissing ovaries

Adherent bowel
Bowel endometriosis

Indian head sign
Endometriosis in bowel wall
Endometriosis in bowel wall
Endometriosis in the bowel wall

Case 3, courtesy of Dr Luca Savelli, Bologna
Bladder endometriosis
Bladder endometriosis
Bladder endometriosis
Endometriosis in the sacrouterine ligaments

Savelli UOG 2009:33;497
Endometriosis in the abdominal wall

Case 1, courtesy of Dr Luca Savelli, Bologna
How to scan for deep infiltrating endometriosis?

Ultrasound examination should be guided by

- Patient’s symptoms
- Speculum examination
- Gynecological palpation
Association between endometriotic lesions and symptoms

*Fauconnier, Fertil Steril, 2002*

<table>
<thead>
<tr>
<th>Type of pain</th>
<th>Type of lesion</th>
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<tbody>
<tr>
<td>Dysmenorhea</td>
<td>Adenomyosis, adhesions</td>
</tr>
<tr>
<td>Dyspareunia</td>
<td>Sacrouterine ligaments</td>
</tr>
<tr>
<td>Pain at defecation</td>
<td>Vagina, rectum</td>
</tr>
<tr>
<td>Chronic pelvic pain</td>
<td>Bowel</td>
</tr>
<tr>
<td>Dysuria</td>
<td>Bladder</td>
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</tbody>
</table>
Deep infiltrating endometriosis - scan technique

- Introduce probe scrutinizing the vaginal walls
- **Uterus** - adenomyosis
- **Ovaries** – endometriomas/freely movable?
- **Sacrouterine ligaments**
- **Posterior compartment** - rectovaginal septum, rectum, rectosigmoid junction
- **Anterior compartment** - bladder

- **Abdominal scan** - hydronephrosis
- Are organs freely movable - sliding?
What does the surgeon want to know in a woman with endometriomas?

- Endometriomas fixed by adhesions?
- Deep infiltrating endometriosis (DIE)?
  - sacrouterine ligaments
  - rectovaginal septum
  - bowel
    - How long is the endometriotic lesion
    - Is the bowel lumen constricted?
      - Double contrast barium enema, CT
  - bladder endometriosis
  - ureters affected (hydronephrosis)?
    - retrograde urography, CT
Summary

• Be aware of deep infiltrating endometriosis

• Let the patient’s symptoms guide your scan

• Let findings at speculum and vaginal examination guide your scan

• Nodules are hypoechoic, irregular borders, firm, tender, poorly vascularized

• Assess mobility!

• Check for hydronephrosis
Thank you

Tisdag 28 augusti C-hallen 14.00-15.30, fritt föredrag
Jan-Henrik Stjerndahl
Laparoskopisk kirurgi ger goda resultat vid endometrios med tarmengagemang

Tisdag 28 augusti C-hallen 17.00-17.30
Per Boström
Endometrios, en resurskrävande sjukdom både för patienten och för samhället.