INFERTILITY EVALUATION

Week 7

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Reading Assignment: Infertility workup for the women’s health specialist. CO 781.
LEARNING OBJECTIVES

• To understand the definition of infertility

• To review the approach to a patient with infertility

• To counsel patients on initial evaluation for infertility
CASE VIGNETTE

• Ms. Nobabies is a 37 yo G0 woman who presents for her annual exam and has no complaints.

• When you ask about contraceptive use, she replies she stopped the birth control pills she had been using for "as long as she could remember" 8 months ago as she and her partner decided they were ready to "try".
FOCUSED HISTORY

• What elements of this patient’s history are most relevant?

• PMH: Seasonal allergies
• PSH: Wisdom teeth
• POBH: G0
• PGYNH: Regular menses on OCPs. Irregular since stopping 8 months ago. Denies abnormal paps or STIs. Denies history of fibroids or cysts.
• MEDS: PNV
• All: NKDA
• FH: Mother has HTN, father with DMII
• SH: Married and partner has been supportive. Denies tob, drug use. Social EtOH use. Denies IPV. Works as a teacher's aide. Accepts blood products.
PERTINENT PHYSICAL EXAM FINDINGS

What elements of this patient’s physical exam are most relevant?

VSS: BP: 130/88, HR: 88, BMI: 31
• General: Well-appearing woman, VSS
• HEET: Normal neuro exam, no thyromegaly, some dark hair along upper lip
• Skin: No rashes, some acne on chin, and upper chest. Darkening of skin along upper back and neck
• CV: RRR
• Pulm: CTAB
• Breasts: Examined in 2 positions, no visible or palpable lesions, no skin dimpling or retractions, no nipple discharge
• Abd: Soft, non-tender, no palpable masses
• Pelvic: Normal external genitalia, physiologic discharge, no blood in vault cervix, no lesions
• BME: AV, mobile, small uterus
INFERTILITY

What is the definition of infertility?
• Failure to achieve pregnancy within 12 months of unprotected intercourse or donor insemination in women under 35
• OR 6 months for women over 35

How common is it?
• Impacts 15% of couples

What percent is attributed to the male factor?
• 40-50%
IMMEDIATE EVALUATION

What are the conditions that should prompt an immediate evaluation to be undertaken?

- Oligomenorrhea or amenorrhea
- Known or suspected uterine, tubal or peritoneal disease
- Stage III or stage IV endometriosis
- Known or suspected male factor infertility
## FIRST STEPS

### Table 1. Basic Infertility Evaluation

<table>
<thead>
<tr>
<th>Female</th>
<th>Male</th>
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<tbody>
<tr>
<td>History</td>
<td>History</td>
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<tr>
<td>Physical</td>
<td>Semen analysis</td>
</tr>
<tr>
<td>Prepregnancy evaluation*</td>
<td></td>
</tr>
<tr>
<td>Additional evaluation for etiology of infertility</td>
<td>Diminished ovarian reserve</td>
</tr>
<tr>
<td></td>
<td>● Antimüllerian hormone or basal follicle-stimulating hormone plus estradiol</td>
</tr>
<tr>
<td></td>
<td>● Transvaginal ultrasonography with antral follicle count</td>
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<tr>
<td></td>
<td>Ovulatory dysfunction</td>
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<tr>
<td></td>
<td>Ovulatory function test (e.g., serum progesterone measurement)</td>
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<tr>
<td></td>
<td>Tubal factor</td>
</tr>
<tr>
<td></td>
<td>● Hysterosalpingography</td>
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<tr>
<td></td>
<td>● Hysterosalpingo-contrast sonography</td>
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<tr>
<td></td>
<td>Uterine factor</td>
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<tr>
<td></td>
<td>● Transvaginal ultrasonography</td>
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<td></td>
<td>● Sonohysterography</td>
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<tr>
<td></td>
<td>● Hysteroscopy</td>
</tr>
<tr>
<td></td>
<td>● Hysterosalpingography</td>
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</tbody>
</table>


https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/06/infertility-workup-for-the-womens-health-specialist
INITIAL EVALUATION- HISTORY

What history should be obtained from any patient presenting with infertility?

- Duration of infertility, and any previous evaluations
- Menstrual history, including signs of ovulation
- Pregnancy history including terminations
- Previous methods of contraceptives used
- Intercourse frequency and any sexual dysfunction
- Past surgical history
- Past GYN history including STDs, endometriosis, fibroids
- Complete review of medical history
- Current meds, supplement usage, and environmental exposures
- Drug, tobacco, or alcohol use
- Family history of infertility, early menopause, developmental delay or birth defects
INITIAL EVALUATION- PHYSICAL

What are key findings in the physical exam when evaluating a patient with infertility?

- BMI, BP
- Thyroid enlargement, tenderness or nodules
- Breast secretions
- Signs of androgen excess (hirsuitism, acne, acanthosis nigricans)
- Vaginal or cervical abnormalities (discharge, anatomical abnormalities)
- Uterine abnormalities (absence of uterus, bulky from fibroids, tenderness, retroverted)
- Adnexal or cul-de-sac masses or tenderness
NEXT STEPS IN EVALUATION

1. Assess for **diminished ovarian reserve**. How?
   • AMH <1
   • Antral follicle count <5-7
   • FSH >10

What are the causes of diminished ovarian reserve?
• Age
• Primary ovarian insufficiency
  • Consider fragile X carrier screening to rule out FMR1 premutation
2. Assess for **ovulatory dysfunction**. How?
   - Menstrual cycles outside of range of 25-35 days without moliminal symptoms.
     - Up to 1/3 of women with normal menses are anovulatory
   - Confirm ovulation with:
     - Midluteal progesterone level > 3
     - Or: positive LH tests, biphasic body temperature or cervical mucus changes

What are the causes of ovulatory dysfunction?
- PCOS rule out with Rotterdam criteria
- Obesity
- Hypothalamic dysfunction TFTs
- Hyperprolactinemia prolactin level
NEXT STEPS continued…

3. Assess for **tubal factor**. How?
   - HSG

What are the causes of tubal factor infertility?
- PID
- Prior ectopic pregnancy
- Prior tubal surgery
NEXT STEPS continued…

4. Assess for **uterine factor**. How?
   - TVUS and SIS
   - Rarely MRI for surgical planning in setting of fibroids or Mullerian abnormalities
   - Hysteroscopy

What are the causes of uterine factor infertility?
   - Endometrial polyps
   - Synechiae
   - Mullerian anomalies
   - Cavity distorting myomas
What factors should be evaluated in the male partner?

- **History:**
  - Sexual dysfunction
  - Duration of infertility
  - Prior fertility
  - Childhood illnesses, developmental issues
  - Medication use, including steroids or supplements
  - Systemic illnesses
  - Gonadal toxins
  - STDS

- **Semen Analysis**

Table 2. The World Health Organization’s Accepted Reference Values for Semen Analysis, 2010

<table>
<thead>
<tr>
<th>Parameter (Units)</th>
<th>Reference Value (Lower Limits, 5th Centile)</th>
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<tbody>
<tr>
<td>Semen volume (mL)</td>
<td>1.5</td>
</tr>
<tr>
<td>pH</td>
<td>≥7.2</td>
</tr>
<tr>
<td>Sperm concentration (10^6 per mL)</td>
<td>15</td>
</tr>
<tr>
<td>Total sperm number (10^6 per ejaculate)</td>
<td>39</td>
</tr>
<tr>
<td>Total motility (%)</td>
<td>40</td>
</tr>
<tr>
<td>Progressive motility (PR, %)</td>
<td>32</td>
</tr>
<tr>
<td>Sperm agglutination</td>
<td>Absent*</td>
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<tr>
<td>Sperm morphology (normal forms, %)</td>
<td>World Health Organization criteria: lower reference limit for normal forms is 4%</td>
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<td>Tygerberg strict criteria: excellent prognosis (&gt;14% morphologically normal spermatozoa), good prognosis (4–14%) and poor prognosis (&lt;4%)†</td>
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High costs of infertility services make them inaccessible to those with lower incomes.

African-American women are more likely to have tubal or uterine factor infertility compared with Caucasians.

Black women have lower live birth rate per cycle than white women.

Communities of color have higher mistrust of the medical community, leading to impactful delays in seeking care for infertility treatment.

Infertility is higher among African-American women, but this population is less likely to seek fertility treatment.
The patient was counseled that evaluation should be sought for failure to conceive within 12 months of unprotected intercourse for women under 35, or 6 months for women over 35, or in the setting of known conditions which can cause infertility. Given that male factor infertility contributes in 40-50% of cases, it was recommend that the partner undergo initial work-up and semen analysis. First steps in female factor evaluation were explained to the patient including obtaining baseline laboratory assessments, performing uterine cavity evaluation, and confirming tubal patency.
CODING AND BILLING

• ICD-10 Code
  • Z31.69: Advice for other general counseling and advice on procreation
  • N97.9: Female infertility, unspecified
  • N46: Male infertility, general
EVIDENCE

