

## Amenorrhea

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Amenorrhea can be divided into primary (no menses by age 16) or secondary (no menses for 3 cycles or 6 months).

(\*For MedPeds: Begin work up at age 13 if no 2<sup>o</sup> sexual characteristics.)

Causes can be divided anatomically: hypothalamic, pituitary, ovarian, uterine/cervical/vaginal. This theme is repeated for 1<sup>o</sup> and 2<sup>o</sup> amenorrhea.

### Case one

27 yof with an unremarkable medical history presents with not having had a menstrual period in the past 3 months.

1. *What is differential diagnosis?*
2. *How does her weight influence the differential?*
3. *What findings on physical examination would be helpful in determining a cause?*
4. *Of the various causes of amenorrhea: physiologic, hypothalamic/pituitary, gonadal or outflow obstruction, how do gonadotropins (i.e., FSH) help in determining the etiology?*
5. *Summarize the lab tests that should be ordered:*
6. *What else should be ordered if she has hirsutism or PCOS, respectively?*

### Case two

17 yof with an unremarkable medical history presents with never having had a menstrual period. She has normal stature and takes no medication.

#### **Questions:**

7. *What is differential diagnosis?*
8. *What laboratory assessment should be ordered?*

#### **Match the clinical findings with the possible condition:**

9. *14 yof with normal genitalia, no breast development, increased FSH*
8. *12 yof with abdominal pain, absent vagina*
10. *13 yof with Tanner stage 4 breast development, blind vaginal pouch*
  - a. *Androgen insensitivity syndrome*
  - b. *Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome*
  - c. *gonadal dysgenesis*
11. *If no etiology can be identified for the patient's amenorrhea, what is the next step?*

### Case three

36 yof with normal, regular periods until 10 months ago presents with amenorrhea. She has experienced hot flashes the past 6 months. Her mother reached menopause at 54 years of age.

Physical findings are normal. FSH is 50 IU/L.

#### **Questions:**

12. *What is the cause of this patient's amenorrhea?*
13. *What associated diseases should be considered?*
14. *What laboratory testing should be ordered?*

#### **True or False?**

15. *After a diagnosis of ovarian failure, pregnancy is not possible.*
16. *An MRI is needed in cases of normal FSH and unexplained amenorrhea.*
17. *In exercise amenorrhea, compared to controls, total cholesterol and LDL are lower.*

**Answers:**

1. *What is differential diagnosis?*

**Pregnancy**

**Hypothalamic/Pituitary (anorexia, cranial tumor, exercise)**

**Outflow abnormality (uterine synechiae)**

**Anovulation/Ovulatory dysfunction**

**Polycystic ovary disease (PCO) (70% of all anovulation)**

**Hyperprolactinemia (10%)**

**Premature ovarian failure (10%)**

2. *How does her weight influence the differential?*

*Underweight:* **hypothalamic (for example an athlete: amenorrhea, eating disorder, osteopenia)**

*Overweight:* **PCO (oligo or amenorrhea, ultrasound with cysts, increased androgens)**

3. *What findings on physical examination would be helpful in determining a cause?*

**Hirsutism, thyromegaly, galactorrhea, abdominal striae**

4. *Of the various causes of amenorrhea: physiologic, hypothalamic/pituitary, gonadal or outflow obstruction, how do gonadotropins (i.e., FSH) help in determining the etiology?*

**Hypothalamic/pituitary low; gonadal high; outflow abnormality normal.**

5. *Summarize the lab tests that should be ordered:*

**hCG, TSH (TRH can stimulate prolactin release), Prolactin (suppresses hypothalamic GnRH secretion), FSH; as medical illness can cause this, confirm normal renal and hepatic function**

6. *What else should be ordered if she has hirsutism or PCOS, respectively?*

**Testosterone + DHEAS**

**Blood glucose, lipid panel, transaminase (steatohepatitis)**

7. *What is differential diagnosis?*

**Pregnancy**

**Abnormal karyotype 50%**

**Hypothalamic hypogonadal [abnormal GnRH activity, hyperprolactinemia, infiltrative lesion] 20%**

**Absent uterus, cervix, vagina 15%**

**Transverse vaginal septum or imperforate hymen 5%**

**Pituitary disease 5%, mixed causes for the remaining percentage**

**Ovary [gonadal dysgenesis or PCOS]**

8. *What assessment should be ordered?*

**Chromosomes**

**hCG**

**TSH, Prolactin**

**FSH**

**Pelvic examination**

**Sonogram (assess vagina, uterus, cervix, adnexa)**

**Match the clinical findings with the possible condition:**

9. 14 yof with normal genitalia, no breast development, increased FSH **c**

8. 12 yof with abdominal pain, absent vagina **b**

10. 13 yof with Tanner stage 4 breast development, blind vaginal pouch **a**

- a. *Androgen insensitivity syndrome*
  - b. *Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome*
  - c. *gonadal dysgenesis*
11. *No etiology can be identified for the patient's amenorrhea, what is the next step?*  
**Head MRI for an infiltrative lesion**

**Case three:**

12. *What is the cause of this patient's amenorrhea?*

**Premature ovarian failure**

13. *What associated diseases should be considered?*

**Many autoimmune diseases: Addison's, autoimmune thrombocytopenia purpura, thyroid disease, diabetes, hypoparathyroidism, myasthenia gravis, pernicious anemia, systemic lupus erythematosus, rheumatoid arthritis  
Turner's syndrome, Fragile X permutation**

14. *What laboratory testing should be ordered?*

**Karyotype, Fragile X testing (FMR1), anti adrenal antibodies, anti thyroid antibodies**

*True or False?*

15. *After a diagnosis of ovarian failure, pregnancy is not possible. F*

**5-10% can conceive after ovarian failure as the failure may be transient**

16. *An MRI is needed in cases of normal FSH and unexplained amenorrhea. T*

17. *In exercise amenorrhea, compared to controls, total cholesterol and LDL are lower. F*

**References:**

Up-to-date 16.3

Setji, N Engl J Med 2009

