HST071: Human Reproductive Biology

Homework 2

Female Reproduction

1. Prolactin increases ____________________ synthesis and secretion from the hypothalamus. Dopamine and dopamine agonists such as ____________________ subsequently inhibits ____________________ secretion. In females, prolactin inhibits ____________________ synthesis and release, which inhibits ____________________.

2. List the following hormones in order of decreasing potency: estriol, estradiol, estrone.

3. Unopposed estrogen therapy leads to an increased risk of ____________________ cancer. Use of ____________________ with estrogen decreases this risk.

4. Estrogen is important for endometrial ____________________ during the follicular phase. Progesterone maintains ____________________ activity of the uterus during the luteal phase.

5. _______ stimulates theca cells to produce ____________________, which diffuses to nearby ____________________ cells. There, it is converted to ____________________ by aromatase. This step is stimulated by ________________.

6. Ovulation occurs _____________ days before menstruation, regardless of cycle length. Ovulation occurs as a result of ____________________-induced _____________ surge.

7. During the luteal phase, basal body temperature (increases/decreases) due to the effect of ____________________ on the ________________ thermoregulatory center.

8. If fertilization occurs, the corpus luteum is rescued from regression by ________________, which is produced by the ____________________.

9. The fetal ____________________ gland synthesizes dehydroepiandrosterone-sulfate (DHEA-S), which is hydroxylated in the fetal ____________________. The intermediates are transferred to the ____________________, where enzymes remove sulfate and aromatize to estrogens.

10. Although prolactin levels increase steadily during pregnancy (stimulated by the hormone ________________), lactation does not occur during pregnancy because ________________ and ________________ block the action of prolactin on the breast.

11. Menopause is characterized by the cessation of ________________ production with age-linked decline in the number of ovarian ________________.

12. The most common microbial cause of mastitis is ________________.

13. Which of these substances decreases the number and density of gap junctions
   (A) connexin-43
   (B) oxytocin
   (C) estrogen
   (D) progesterone
   (E) prolactin

14. Oxytocin receptors are found in the highest concentrations in the
   (A) cervix
   (B) fundus
(C) lower segment of the uterus
(D) vagina
(E) fundus and cervix

15. Which of the following explains the suppression of lactation during pregnancy?
   (A) Blood prolactin levels are too low for milk production to occur
   (B) Human placental lactogen levels are too low for milk production to occur
   (C) The fetal adrenal gland does not produce sufficient estriol
   (D) Blood levels of estrogen and progesterone are high
   (E) The maternal anterior pituitary is suppressed

16. The source of estrogen during the second and third trimesters of pregnancy is the
   (A) corpus luteum
   (B) maternal ovaries
   (C) fetal ovaries
   (D) placenta
   (E) maternal ovaries and fetal adrenal gland
   (F) maternal adrenal gland and fetal liver
   (G) fetal adrenal gland, fetal liver, and placenta

17. Secretion of oxytocin is increased by
   (A) milk ejection
   (B) dilation of the cervix
   (C) increased prolactin levels
   (D) increased serum osmolarity

18. Secondary amenorrhea refers to the absence of menses for ________ months in a woman
    who previously had menses. The most common cause is ____________________, so a
    serum ________________ assay is always the first step in an evaluation.

19. Secondary amenorrhea can be classified pathophysiologically as follows:
   • Hypothalamic/pituitary disorders, characterized by (increased/decreased/normal) FSH
     and LH. These include primary and functional gonadotropism deficiencies.
   • Ovarian disorders, characterized by (increased/decreased/normal) FSH and LH.
   • End-organ disease, characterized by (increased/decreased/normal) FSH and LH

20. In addition to gonadotropin levels, a progesterone challenge is an excellent test to perform in
    the initial evaluation of these patients. Withdrawal bleeding indicates that the endometrial
    mucosa must have been primed with ________________, so the ______________________
    axis and ovaries must be normal. It also rules out an end-organ defect.

Match the following clinical descriptions of women with secondary amenorrhea with the most
likely laboratory findings.

<table>
<thead>
<tr>
<th></th>
<th>Serum FSH</th>
<th>Serum LH</th>
<th>Bleeding following Progesterone administration</th>
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</thead>
<tbody>
<tr>
<td>(A)</td>
<td>Normal</td>
<td>Normal</td>
<td>No</td>
</tr>
<tr>
<td>(B)</td>
<td>Increased</td>
<td>Increased</td>
<td>No</td>
</tr>
<tr>
<td>(C)</td>
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<td>Normal</td>
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<td>No</td>
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<tr>
<td>(E)</td>
<td>Decreased</td>
<td>Increased</td>
<td>Yes</td>
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</table>
21. ______ A 35-year-old woman with a history of numerous dilation and curettage procedures for menorrhagia. (For extra credit, this woman likely has ___________________ syndrome).

22. ______  A 24-year-old woman with anorexia nervosa.

23. ______ A 42-year-old woman whose ovaries have been surgically removed; hormone replacement has not been initiated.