ANSWERS: CHAPTER 11

MATCHING

1. o  6. a  11. i  16. n
2. k  7. h  12. m  17. e
3. r  8. b  13. c  18. l
4. g  9. q  14. f  19. p
5. s  10. d  15. j

IMAGE LABELING

1. hydrosalpinx/pyosalpinx
2. multiple adhesions
3. tuboovarian abscess (TOA)
4. fallopian tube stricture
5. likely region of endometritis
6. intrauterine device (IUD)
7. curettage swab
8. Gonococcus
9. Streptococcus
10. Staphylococcus
11. Actinomyces
12. Mycoplasma
13. Chlamydia
14. bacterial infection spreading via vagina, uterus, and through lymphatics
15. gonorrhea spreading via vagina, uterus, tubes, and ovaries
16. bacterial infection spreading via bloodstream (hematogenous spread)
17. ileum
18. fallopian tube
19. umbilicus
20. rectus muscle
21. appendix
22. free peritoneal surface
23. urinary bladder surface
24. vulva
25. ovary
26. pelvic colon
27. uterine surface
28. cervix
29. rectovaginal septum
30. perineum
31. adenomyosis

MULTIPLE CHOICE

1. d  6. c  11. b  16. c
2. c  7. d  12. a  17. b
3. a  8. b  13. b  18. a
4. d  9. a  14. a  19. d
5. b  10. c  15. c  20. b

FILL-IN-THE-BLANK

1a. fallopian tubes
1b. oviducts
2a. chronic pelvic pain
2b. ectopic pregnancy
2c. infertility
3a. pelvis
3b. ovaries
4a. chlamydia trachomatis
4b. Neisseria gonorrhea
5a. low abdominal pain
5b. pelvic pain
5c. dull
5d. adnexal
6a. EV
6b. Doppler
7a. early
7b. dramatic
8. bacterial vaginosis
9. resistance
10a. endometriomas
10b. chocolate cysts
10c. 5 to 10
11. pericystic
12a. observation
12b. analgesics
13a. chronic
13b. infertility
14. adenomyosis
15. chronic
16. endometriosis
17. MRI
18. active adolescents
19. malignancy
20a. endometrial glands
20b. stroma
20c. seeding

SHORT ANSWER

1. PID begins vaginally, then migrates to the cervix. If infection spreads beyond the cervical barrier, the result is endometritis, which is Stage 1. From the endometrium, infection moves into the oviducts, which results in acute salpingitis, Stage 2. Extension of the inflammatory exudate from the salpinges may involve the broad ligaments (parametritis) and the ovaries (oophoritis). Stage 3 is acute tuboovarian complex, with ovarian enlargement and adherence to other adnexal structures. Purulent material can also affect the uterus, the peritoneum, and the bowel.

2. Cervical motion tenderness, uterine tenderness, adnexal tenderness, oral temperature > 101°F (38.33°C), mucopurulent cervical discharge, increased WBC seen on microscopic evaluation of vaginal discharge, elevated erythrocyte sedimentation rate, elevated C-reactive protein, and N. gonorrhea or C. trachomatis cervicitis, findings of endometritis on endometrial biopsy, and laparoscopy. Ultrasound, CT scan, and MRI are specific for diagnosis.
3. Endometriosis is ectopic endometrial tissue, which adheres to surface peritoneum of the ovary, anterior and posterior cul-de-sac, the broad ligaments, pelvic lymph nodes, the cervix, vagina, vulva, and the rectosigmoid colon. This heterotopic tissue has also been discovered in areas of previous surgical incisions of the abdominal wall, the umbilicus, bladder, ureter, kidney, extremities, and lung. Symptoms of endometriosis are abdominal and pelvic pain, including dysmenorrhea, dyspareunia, dysuria, pain on defecation, and infertility. Staging is based on extent of disease noted during laparoscopy. Stage I is minimal, Stage II is mild, Stage III is moderate, and Stage IV is severe. Keep in mind that the staging method used does not consider patient discomfort levels or symptoms.

4. PID is an unlikely diagnosis given her marital commitment, although uterine enlargement and tenderness are symptoms. Endometriosis presents with a uterus normal in size. It also frequently demonstrates dysmenorrhea, dyspareunia, dysuria, pain on defecation, chronic pelvic pain, and infertility, none of which this patient is suffering from. Adenomyosis consists of a diffusely enlarged uterus, tenderness, and abnormal bleeding. Based solely on patient complaint and clinical findings, the most likely diagnosis is adenomyosis. Imaging such as ultrasound, MRI, and possibly radiography would benefit this patient. Laparoscopy may be necessary also to determine the extent of disease if endometriosis is evident.

**CASE STUDY**

1. An endometrioma is visualized. This appears as a discrete, thick-walled, spherical adnexal mass and may display uniform low-level internal echoes or a “ground glass” appearance. Endometriomas can appear anechoic or solid. Color Doppler exhibits a pericyclic flow pattern when applied to ovarian endometriomas. Flow within a cyst or endometrioma should raise suspicion for malignancy.

2. Adenomyosis is frequently seen affecting the posterior wall of the uterus. Images A and B, which demonstrate irregular endometria, reveal this process. Uterine measurements, although nonspecific in diagnosing adenomyosis, can assist with characterizing the condition. Anechoic irregularities, as seen with images A and B, are typical findings related to this process. This may represent myometrial cysts related to dilated endometrial glands or areas of hemorrhage. Visualization of the endometrial/myometrial junction is usually limited, which can cause a false appearance of a thickened endometrium.

**IMAGE EVALUATION/PATHOLOGY**

1. The fallopian tube (open arrow) has thickened walls and internal debris suggesting pyosalpinx. The adnexal structure appears edematous. Color Doppler was used to collect this image (see image lower right which is labeled CD GAIN = 48). The long arrow points to iliac vessels.

2. The image shows a left ovary in the sagittal view with an adjacent tubal structure, which are adherent. The architecture is well visualized, meaning the tuboovarian complex is the most correct diagnosis. (This patient has a history of PID). The measurements should be recorded as 4.4 cm × 2.4 cm for the radiologist.

3. A thin incomplete septa is seen within the hypoechoic adnexal mass, consistent with hydrosalpinx. The thin, linear septa does not cross the entire diameter of the mass. This appearance assists in distinguishing the mass as a hydrosalpinx. Ovarian septations are generally thicker and span the structure.

4. A large adnexal mass consistent with endometrioma is demonstrated. The mass is thick walled and has a unilocular, homogeneous or “ground glass” appearance typically seen in ovarian endometrioma.

5. The image reveals an ovarian endometrioma that does not exhibit the typical homogeneous, “ground glass” appearance. This adnexal mass may be easily mistaken for a hemorrhagic cyst with heterogeneous internal debris, or a benign cystic teratoma with linear echogenicity. Persistence of the mass over multiple cycles favors the diagnosis of endometrioma or benign cystic teratoma over a hemorrhagic process.