Anterior Abdominal Wall
Nerves, vessels and applied anatomy

Curricular Objectives

AAW: Anterior Abdominal Wall

By the end of this session students are expected to:

Practical

1. Review the content of the neurovascular plane and the dermatomes of AAW
2. Trace major vessels & nerves along the neurovascular plane of AAW
3. Differentiate between course of iliohypogastric and ilioinguinal nerves
4. Follow the course taken by the superior and inferior epigastric vessels
5. Distinguish the superficial network of veins and the lateral thoraco-abdominal channel
6. Discriminate the veins dilated in caval and portal obstruction
7. Identify different sites of surgical incisions performed on AAW using surface markings
8. Recognize linea alba, linea nigra, and linea semilunaris & scars of surgical operations

Theory

1. Underline the nerve supply of different layers of the AAW
2. Name the arteries supplying the wall and describe their main course
3. Discuss the venous drainage of the wall and the patterns of dilatation in disease
4. Define the terms cavo-caval & porto-caval anastomosis
5. Describe the patterns of venous dilatation on AAW seen caval and portal obstruction
6. Compare the normal umbilicus to that seen in distended abdomen
7. List the layers of the AAW encountered in different surgical incisions
8. Acknowledge the terms visceroptosis and beer belly

Selected references and suggested resources

✦ Clinical Anatomy by Regions, Richard S. Snell, 9th edition
✦ Grant's Atlas of Anatomy, 13th Edition
✦ McMinn's Clinical Atlas of Human Anatomy, 7th Edition
✦ Anatomy for Babylon medical students (facebook page)
✦ Human Anatomy Education (facebook page)
✦ Human anatomy education (youtube channel)

This session has been reviewed by
Anatomy team at the Department of Anatomy and Histology/College of Medicine/University of Babylon/2016

Session check list

❖ Clinical importance
  ➢ Memorizing the course of major blood vessels passing along the AAW can help avoid inadvertent cut during surgical operations and predict injury in perforating wounds of AAW
  ➢ Understanding the nerve supply of the AAW can be of great help in predicting which part of the abdominal viscera is involved in disease
  ➢ Clinical problems related to the anterior abdominal wall neuro-vasculature include superficial abdominal reflexes, rectus sheath hematoma, and dilated veins
Nerves of the AAW

- List the nerves involved in supplying the different layers of AAW
- Course and Distribution

**Note:** Refer to Snell clinical anatomy by regions 9th edition (Figure 4.16 page 125) for nerve distribution and dermatomes of anterior abdominal wall

**Note:** Dermatomes of epigastric, umbilical, & hypogastric regions must be memorized for long

- The nerves run forward in the neurovascular plane between two muscles, name them
- How do the thoracic nerves reach the anterior abdominal wall?
- List the nerves that enter the rectus sheath
- Which nerve supply the pyramidalis muscle?
- What are the layers supplied by the AAW nerves?
- List the sensory nerves supplying the skin of the following regions
  1. Epigastric
  2. Umbilical
  3. Hypogastric

Arterial supply

- Three main arteries supply the AAW in addition to branches from aorta
  1. Subclavian artery
  2. External iliac artery
  3. Femoral artery
- Explain how the Subclavian artery supply the AAW
- Name the branches of external iliac artery that supply the AAW
- What arteries lie within the rectus sheath? Describe their course

Venous drainage

- Superficial network of veins:
  - This network is drained by three large veins
    1. List these veins
    2. Distinguish the vessels connecting the network to these large veins
    3. Clarify the meaning of cavo-caval anastomosis and outline the veins involved
    4. Define the term portocaval anastomosis and describe the one within the AAW
- Deep veins
  - Follow the arteries of the same name
  - Drain to superior and inferior vena cava
肥料词汇

- **Applied anatomy**
  - **Surgical incisions**
    - In addition to the direction of cleavage lines of skin, What are the anatomical factors that affect the length and direction of surgical incisions through the AAW?
    - In operations on the AAW, what is the consequence of the followings
      1. Inadvertent cut of a nerve
      2. Cutting muscle fibers
  - **Types**
    - (a) Laparotomy
      - List the layers of AAW encountered in each of the following types of surgical incisions
        1. Midline incision
        2. Paramedian incision
        3. McBurney’s (Gridiron) incision
        4. Suprapubic (Pfannenstiel) incisions
      - In paramedian incision, There is no risk of injuring segmental nerves. Why?
      - How to locate the McBurney’s point?
      - What nerve is at risk when an incision is made at McBurney’s point?
    - (b) Laparoscopy

- **Homework activity**
  - Ask a family member to examine his abdomen, fulfill the following tasks, then answer the questions in the report form provided
    - Inspect for the general contour of the abdomen
    - Inspect the abdomen for movements with respiration
    - Inspect the abdomen for scars of previous operations
    - Inspect the abdomen for dilated veins
    - Use the palmer aspect of your hand to feel the abdominal cavity
REPORT FORM FOR ANTERIOR ABDOMINAL WALL HOMEWORK ACTIVITY

Please fill the report form after you finish the required tasks then submit it to your lab instructor.

You are encouraged to talk about your experience in your own words.

1. What is the anatomical difference between visceroptosis and beer belly

2. Could you notice the movement of the wall with respiration? Describe this movement

3. In your opinion, what causes this movement?

4. Irritation of parietal peritoneum from pathologies involving the abdominal cavity, can abolish this movement. Explain

5. If you found a scar. Describe its location, and name the surgical incision produced it

6. What does the scar of laparoscopic surgery look like? ________________________________

7. If portal vein of a patient is blocked,
   - What veins are expected to dilate on AAW? ______________________________
   - Name the sign __________________________

8. If inferior vena cava of a patient is blocked,
   - What veins are expected to dilate on AAW? ________________________________

9. When you felt the abdominal cavity, the muscles were relaxed or stiff? __________________

10. What causes the abdominal muscles to feel stiff during examination?
    1. ____________________________  2. ____________________________

11. How to differentiate normal from pathological stiffness?