

STRUCTURAL BASIS OF MEDICAL PRACTICE

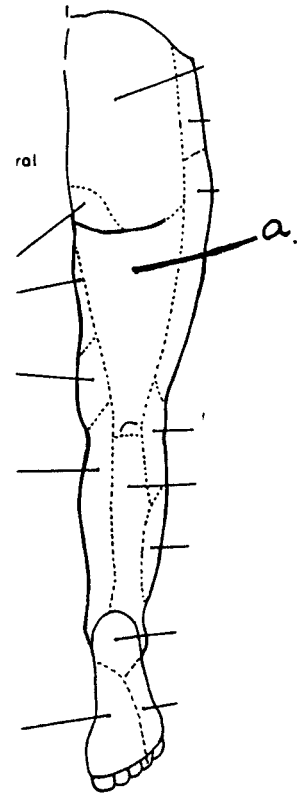
EXAMINATION I

September 2, 2004

PART I. Answer in the space provided. (7 pts)

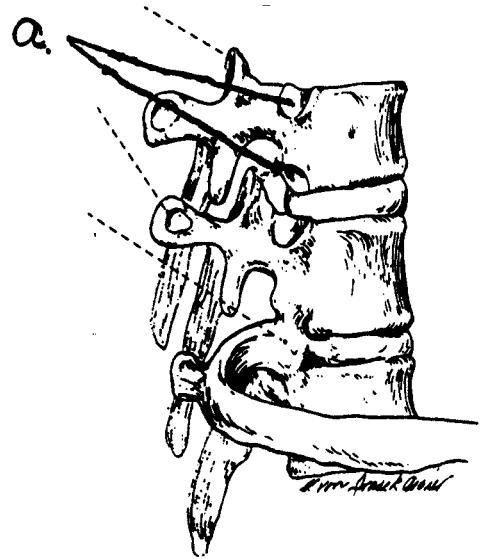
1. Identify the innervation. (0.5 pt)

a. _____



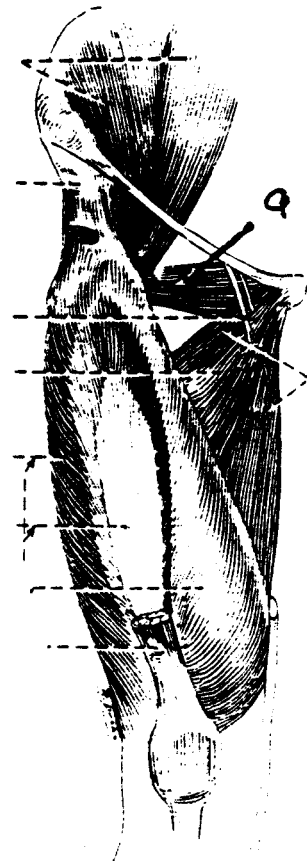
2. Identify the structures. (0.5 pt)

a. _____



3. Identify the structure. (0.5 pt)

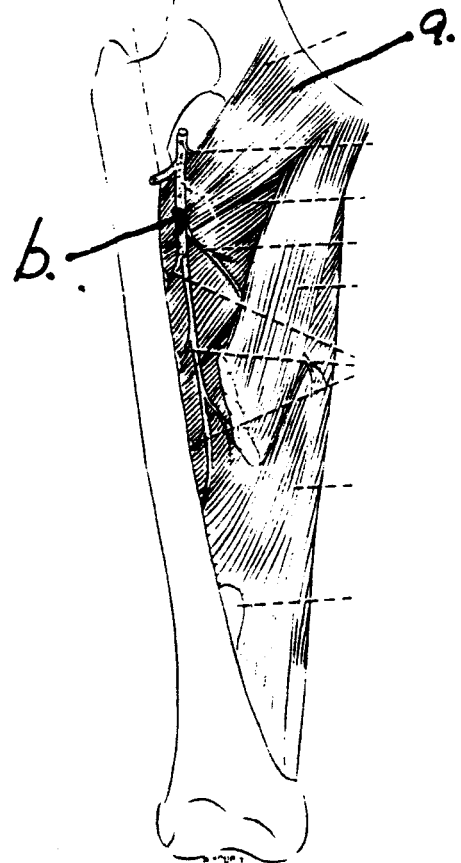
a. _____



4. Identify the structure. (1 pt)

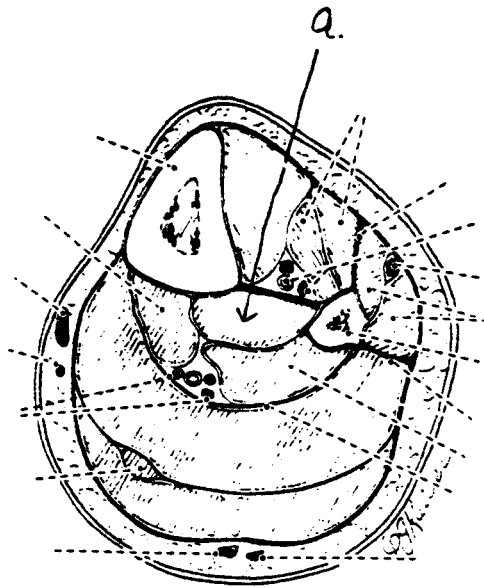
a. _____

b. _____



5. Identify the structure. (0.5 pt)

a. _____



6. Identify the structure. (0.5 pt)

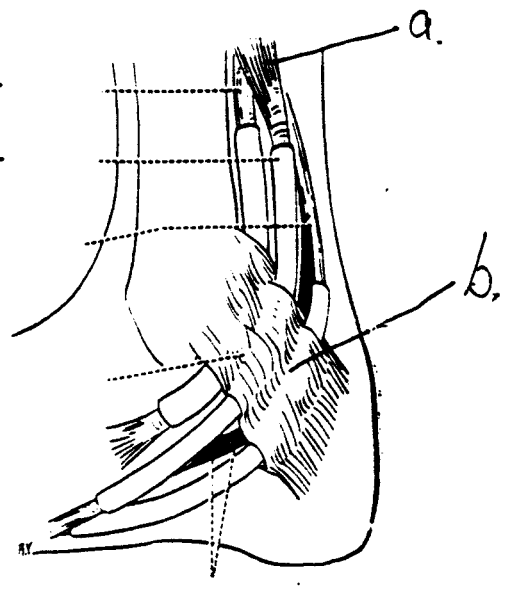
a. _____



7. Identify the structure. (1 pt)

a. _____

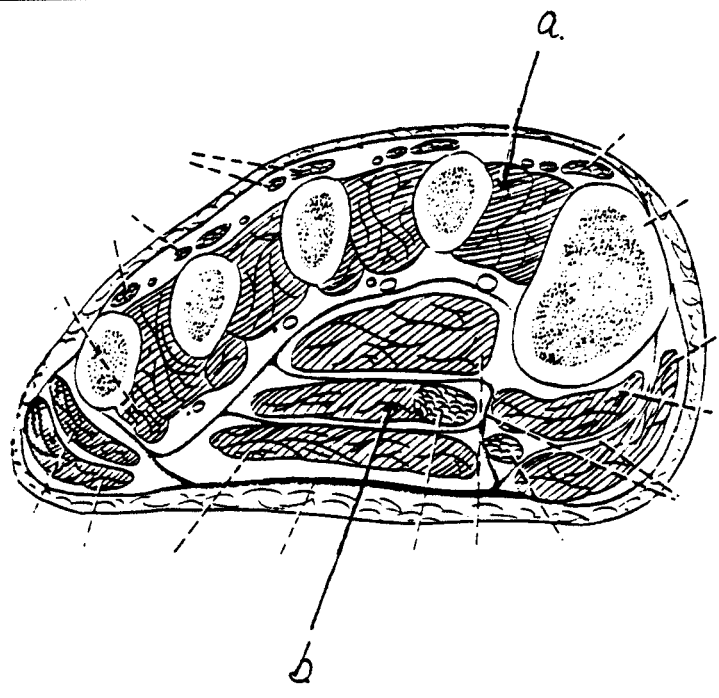
b. _____



8. Identify the structure. (1 pt)

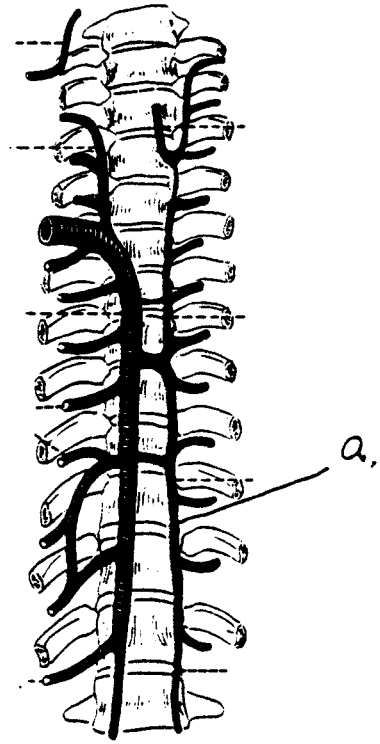
a. _____

b. _____



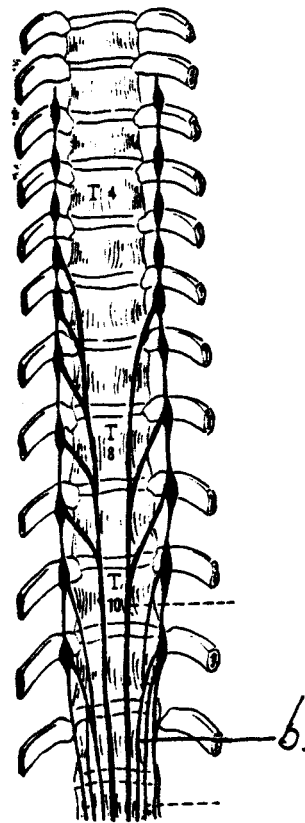
9. Identify the structure. (0.5 pt)

a. _____



10. Identify the structure. (0.5 pt)

a. _____



11. Identify the structure. (0.5 pt)

a. _____

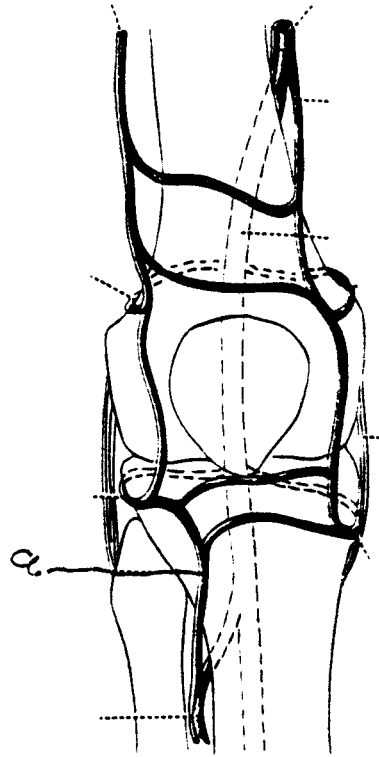


Diagram of the arteries that form an anastomosis the knee joint and supply it; anterior view.

Part II. Circle the correct answer. All, none, or some may apply. (22 pts)

1. With respect to the nervous system:

- a. There is a gray ramus communicans at the level of T2.
- b. The somatic efferents of the femoral nerve consist of pre- and post-ganglionic neurons.
- c. The parietal layer of serous pericardium is innervated by the phrenic nerve.
- d. Parasympathetic innervation to the heart dilates the coronary arteries.
- e. The deep cardiac plexus is located on the anterior surface of the tracheal bifurcation.
- f. The myocardium is innervated by the somatic nervous system.
- g. Post-ganglionic neurons of the parasympathetic nervous system are generally quite long compared to pre-ganglionic neurons.
- h. Preganglionic fibers of the vagus nerve do not synapse in the sympathetic trunk.

2. With regard to the subinguinal/thigh region:

- a. The femoral sheath encloses the femoral nerve.
- b. The femoral canal is cone-shaped, with its base, the femoral ring, facing into the abdomen.
- c. The superior gluteal artery contributes to the cruciate anastomosis.
- d. The descending genicular artery can be found in the adductor canal.
- e. The medial femoral circumflex artery arises from the medial aspect of the profunda (deep) femoral artery and turns posteriorly between the pectineus and adductor longus muscles.
- f. One of the heads of the rectus femoris, as well as the inguinal ligament, arise from the anterior inferior iliac spine.

3. With respect to the lungs and ventilation:

- a. The right pulmonary artery is longer than the left pulmonary artery.
- b. The cardiac notch is an area that can be utilized to introduce a needle into the pericardial sac without penetrating the pleural cavity.

- c. A bronchopulmonary segment consists of a 2nd order bronchus, lung tissue, and the pulmonary artery.
 - d. The inferior margin of the parietal pleura is at the level of T10 in the midaxillary line.
 - e. The left principal bronchus is smaller in diameter, and approximately twice as long, as the right principal bronchus.
 - f. The right bronchial vein empties into the azygous vein.
4. In regard to the thigh/popliteal fossa:
- a. The popliteal artery commences at the adductor hiatus as the continuation of the femoral artery.
 - b. The medial sural cutaneous nerve is a branch of the tibial nerve.
 - c. The adductor magnus forms a boundary of the femoral triangle.
 - d. The profunda (deep) femoris vein enters the popliteal fossa.
 - e. A characteristic of a hamstring muscle is innervation by the tibial portion of the sciatic nerve.
 - f. The medial inferior genicular artery passes superior to the medial head of the gastrocnemius muscle.
5. In the thorax:
- a. The esophagus is narrowed where it crosses the left bronchus.
 - b. The right vagus nerve travels posterior to the root of the right lung.
 - c. The arch of the aorta reaches the level of the fourth thoracic vertebra.
 - d. The esophageal plexus is formed by the vagal nerves.
 - e. In the posterior mediastinum, the thoracic duct lies deep to the esophagus.
 - f. The azygous vein ascends in the posterior mediastinum to the level of the fourth thoracic vertebra, when it terminates into the superior vena cava.

6. In the foot:

- a. The oblique head of the adductor hallucis is innervated by the lateral plantar nerve.
- b. The arcuate artery runs deep to the tendons of the flexor digitorum brevis and longus.
- c. The medial and lateral calcaneal arteries arise from the dorsalis pedis artery.
- d. The 1st lumbrical muscle is innervated by the medial plantar nerve.
- e. The flexor digitorum brevis and flexor digitorum longus form, in part, the extensor expansion.
- f. The lateral plantar artery is a branch of the anterior tibial artery.

7. With respect to the lower extremity:

- a. Gravity passes anterior to the hip and posterior to the knee and the ankle.
- b. The iliofemoral ligament arises from the anterior inferior iliac spine.
- c. The popliteus muscle can medially rotate the tibia when the leg is off the ground.
- d. The tibionavicular ligament is part of the deltoid ligament.
- e. The subtalar joint is related to the talus and calcaneus.
- f. The tendon of the flexor hallucis longus lies inferior to the sustentaculum tali.

Part III. Indicate your understanding (characteristics, importance, function, relationships, boundaries and/or contents) of the following. Answer in the space provided. (31 pts)

1. Saphenous opening. (6 pts)

2. Lymphatic drainage of the lung. (5 pts)

3. **Medial meniscus.** (5 pts)

4. **Adductor magnus.** (6 pts)

5. **Ligamentum capitis. (5 pts)**

6. **Insertion of flexor muscles into the 3rd digit. (4 pts)**

Part IV. Answer in the space provided (including the back of the page for each question). (40 pts)

1. A 35-yr old male is brought to the emergency room with a stab wound to the thorax. You suspect that this penetrating wound resulted in trauma of the superior mediastinum. Such trauma may have lethal consequences, or it could lead to mediastinitis (infection/inflammation of the mediastinum) if early surgical treatment does not occur. **Discuss the boundaries (6 directions), contents, and relationships of structures in the superior mediastinum. (10 pts)**

2. A 27-yr old female is in a motorcycle accident. She complains of "walking funny" and has a "pain" in her left leg. An x-ray shows a fracture of the fibula, and gait analysis indicates that the sole of her left foot is turned inwards. You suspect damage to the lateral compartment of the leg. **Discuss the boundaries, contents, and relationships in the lateral compartment of the leg; include muscles, nerves, vasculature, and fascial specializations. Indicate the function of the lateral compartment of the leg, and define the effects of injury to this compartment on the actions of the foot and support of the arches. (10 pts)**

3. A 70-yr old female with a long history of heart disease presents with dyspnea (shortness of breath), pulmonary congestion, and left ventricular distention (dilation). She has recently complained of a pain on the inside of her left upper extremity. You suspect mitral (bicuspid) insufficiency. **Discuss the structure of the left ventricle, including the atrioventricular and semilunar valves. Would the pain in her left extremity be related to a problem with the heart?** (10 pts)

4. A 36-yr old male was being treated with an injection of penicillin into the right buttock. A short time later he had difficulty walking, with the most noticeable problem being a loss of balance and a sagging of the pelvis when the left leg was lifted off the ground (a positive Trendelenburg sign). You suspect injury to the superior gluteal nerve. **Discuss the superior gluteal nerve - its location and course in the gluteal region. Explain what may have occurred with the injection and why there is a gait problem. Will both extremities be altered insofar as actions? Include the actions of muscles innervated by the superior gluteal nerve, as well as origins and insertions? How would the patient compensate for this injury during walking?** (10 pts)