Miami Dade College

Course Description

SON1141C | Small Parts Sonography | 2.00 credits

This course is designed as an introduction to small Parts/superficial structures sonography, which will address topics such as: Thyroid, Parathyroid and Neck, The Male Pelvis (scrotum, and prostate), and Breast ultrasound. Integrated into this course are the anatomy and physiology, sonographic evaluation, and presentation, as well as the related pathological findings and differential diagnoses pertaining to each structure. Prerequisite: SON1112C,

Course Competencies

Competency 1: The student will demonstrate knowledge and comprehension of anatomy, physiology, sonographic appearance, pathology, pathophysiology, and scanning procedures of normal and abnormal structures of the neck by:

1. Identifying the gross, cross-sectional, sagittal, and coronal planes of the thyroid, parathyroid, and surrounding anatomical structures, including the vasculature and muscles
2. Describing the physiological function of the thyroid and parathyroid
3. Identifying if the thyroid gland is endocrine or exocrine
4. Recalling the hormones released by the thyroid gland and their controlling factors
5. Distinguish between a "hot" or "cold" spot (area of increased uptake, decreased uptake, or no uptake) on a nuclear medicine study
6. Listing which lesions show up as "hot" or "cold" on a nuclear study
7. Differentiating normal and abnormal sonographic appearance of the thyroid
8. Identifying the sonographic appearance of thyroid pathologies
9. Describing the symptoms associated with hypocalcemia
10. Describing which structure(s) a parathyroid mass must be distinguished from
11. Identifying the cause of hyperparathyroidism associated with the neck area
12. Correlating related diagnostic imaging procedures and sonographic examinations of the thyroid, parathyroid, and surrounding neck locations
13. Describing the protocol, patient position, scanning planes, andknobology for obtaining a diagnostic examination of the thyroid, parathyroid, and surrounding neck area
14. Identifying normal anatomy of the neck Identifying normal vs abnormal sonographic patterns and congenital anomalies
15. Describing the utilization of Doppler techniques
16. Explaining the role of Doppler in evaluating structures in the neck (spectral and color-flow)
17. Discuss the differential diagnosis for thyroid abnormalities, parathyroid abnormalities, and neck masses based on the clinical history, laboratory data, results of related diagnostic procedures, sonographic appearance, and blood flow patterns

Competency 2: The student will demonstrate knowledge and comprehension of anatomy, physiology, sonographic appearance, pathology, pathophysiology, and scanning procedures of normal and abnormal structures of the male reproductive system by:

1. Describing the structural organization of the male reproductive system
2. Identifying the anatomy of the scrotal contents
3. Identifying and describing the sonographic appearance of the scrotal contents
4. Discussing the vascular supply to the scrotal contents
5. Describing the patient positioning and scanning protocol for an ultrasound exam of the scrotum
6. Reviewing the technical considerations of ultrasound imaging related to scrotal ultrasound
7. Discussing the role and application of color and spectral Doppler in the scrotal ultrasound exam
8. Describing the sonographic appearance of scrotal pathology
9. Identifying the differential diagnosis for scrotal pathology
10. Comparing and contrasting sonographic appearance of normal and abnormal findings of scrotal ultrasound
11. Describe the normal anatomy and scanning techniques to demonstrate the male pelvis

12. Discussing gross anatomy, pathology, and scanning techniques of the ureters, urinary bladder, prostate, and testicles
13. Identifying the gross, cross-sectional plane, and sagittal anatomy of the scrotum, testes, and epididymis
14. Correlating related diagnostic imaging procedures and sonographic examinations of the scrotum, testes, and epididymis
15. Describe the protocol, technical standards, and appropriate use of ultrasound controls for obtaining a diagnostic examination of the scrotum, testes, and epididymis
16. Describing modalities and ultrasound techniques used to demonstrate pathology of the scrotal contents

Competency 3: The student will demonstrate knowledge comprehension of anatomy, physiology, sonographic appearance, pathology, pathophysiology, and scanning procedures of normal and abnormal structures of the breast by:

1. Describe the basic anatomic structures of the breast and how they relate to the sonographic layers
2. Identifying the different sonographic layers of the breast and boundary tissues, including skin, subcutaneous layer, mammary layer, retromammary layer, and chest wall
3. Describe the sonographic technique used in scanning the breast
4. Identifying methods (clock face and quadrant) to describe the location of a breast mass
5. Labeling the three-dimensional size of a breast mass using two methods (sagittal/transverse and radial/ anti-radial)
6. Describing sonographic evaluation of the breast: Technique and ultrasound pitfalls
7. Describing applications of breast sonography in evaluating a mass: cystic versus solid nature of smooth mammographic masses
8. Discussing evaluation of a palpable breast lump
9. Discussing when the patient presents with a problematic or compromised mammogram
10. Describing the difference between using breast ultrasound as the primary imaging tool and using it in an adjunctive role
11. Identifying at least three sonographic characteristics of common breast masses
12. Explaining the evaluation of breast implants and how to rule out rupture
13. Discussing the concept of screening versus diagnostic breast imaging
14. Describing breast imaging and clinical evaluation: classification of a breast lesion and when the patient presents for breast ultrasound
15. Describe the difference between using breast ultrasound as the primary imaging tool and using it in an adjunctive role
16. Listing and discussing at least two common pitfalls in imaging the breast with ultrasound and how to avoid them
17. Identifying at least three sonographic characteristics of common breast masses
18. Discussing breast procedures for which ultrasound guidance is used

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively