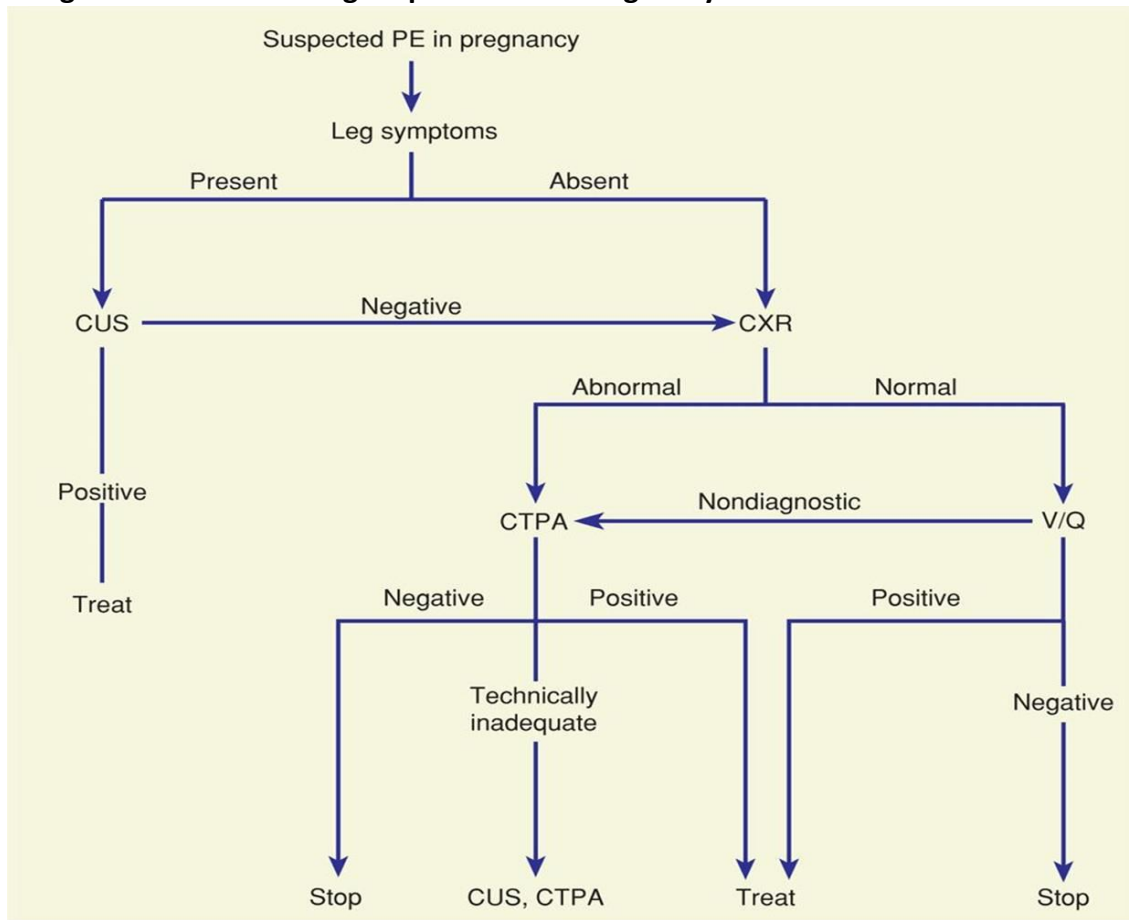


Diagnosis and Treatment of Acute Venous Thromboembolism (VTE) in Pregnancy Protocol

- **Deep Venous Thrombosis (DVT):**
 - **Imaging:** Doppler ultrasound as initial test: highly sensitive and specific for symptomatic proximal vein thrombosis. If testing is non-diagnostic, may consider contrast venography with shielding or MRV.
 - **Treatment:** If DVT is diagnosed, patient may be started on subcutaneous adjusted dose anticoagulation in outpatient setting. Draw baseline CBC and coagulation profile.
 - **Thrombophilia testing is indicated for both DVT and pulmonary embolus (PE) diagnosis**—see Thrombophilia and Anticoagulation Protocol for testing guidelines and accuracy of specific tests during pregnancy and while already on anticoagulation.
 - **Consider testing prior to anticoagulation initiation if possible.**
- **Pulmonary Embolism (PE):**
 - If PE suspected and DVT confirmed, no need to document PE—admit and treat presumptively as a pulmonary embolism.
 - **Imaging:** See algorithm below
 - If diagnosis of PE is made, admit patient and obtain baseline CBC and Coagulation panel.
 - Do not place SCD's until DVT has been ruled out.
 - Monitor patient's oxygen saturations
 - Initiate adjusted/therapeutic dose anticoagulation (refer to Thrombophilia and Anticoagulation Protocol for dosing specifics).
 - Subcutaneous (SC) LMWH is preferred over IV unfractionated heparin (UFH) or SC UFH except in patients with renal failure (creatinine >1.5) active hemorrhage, or in patients likely to require thrombolytic therapy or emergency surgery.
 - In stable patients, use SC adjusted/therapeutic dose LMWH
 - If potentially unstable or have above risks, initiate IV adjusted/therapeutic UFH
 - Anticoagulation should be continued for at least 6 weeks postpartum and total treatment length at least 6 months
- If high clinical suspicion for acute PE, empiric anticoagulation is indicated prior to the diagnostic evaluation and treatment may be discontinued if VTE is excluded
- **Thrombophilia testing is indicated for both DVT and PE diagnosis**—see Thrombophilia and Anticoagulation Protocol for testing guidelines and accuracy of specific tests during pregnancy and while already on anticoagulation.
 - **Consider testing prior to anticoagulation initiation if possible**
- If high suspicion and negative testing, consider repeating imaging in 72 hours and administer empiric anticoagulation

Figure 1: Algorithm for evaluating suspected PE in Pregnancy

(adapted from William's *Obstetrics*), arrow addition

Figure 1: The American Thoracic Society and Society of Thoracic Radiology diagnostic algorithm for suspected pulmonary embolism during pregnancy. CTPA = computed tomographic pulmonary angiography; CUS = compression ultrasonography; CXR = chest x-ray; PE = pulmonary embolism; V/Q = ventilation/perfusion scintigraphy.

- **Tromeur & Colleagues (2019): Metanalysis comparing VQ scan vs CTPA for diagnosis of PE in pregnancy**
 - Pooled Total VQ scans: 2535
 - % nondiagnostic: 12.7% (95% CI 8-17%)
 - Pooled Total CTPA: 1774
 - % nondiagnostic: 14.4% (95% CI 10-18)
 - False negative test result was 0% for both imaging strategies with overlapping confidence intervals.
 - Both imaging tests equally safe to rule out pulmonary embolism in pregnancy.
 - No significant differences in efficiency and radiation exposures between computed tomography pulmonary angiography and ventilation-perfusion lung scanning

- **Analysis of VQ scans at UC between 2016-2021**
 - 8 studies: none nondiagnostic
 - 1 VQ scan performed after nondiagnostic CTPA (morbidly obese patient)
 - Most followed a normal chest x-ray preceding VQ scan.
- **Summary of Special Considerations when deciding imaging modality**
 - Patients with pneumonia, chronic lung disease, previously diagnosed PE are **poor candidates for VQ scan and should receive a CTPA.**
 - If differential diagnosis is broad and includes other lung/chest pathologies, **VQ scan will not detect other structural issues and patients should receive CTPA.**
 - Because both imaging modalities will have a decreased sensitivity in women who are morbidly obese, follow the algorithm with consideration of obtaining the other modality if a nondiagnostic result is obtained in one imaging study.
 - **At UC after 5pm, the VQ scan team has to be called in, so, in an acute situation where the result is needed in a timely fashion, a CTPA should be ordered.**

References:

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