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Overdue Cat

Reference: Jeffrey A Kline, MD, Danielle M Richardson, Martin P than, MBBS, Andrea Penaloza, MD, PhD, And Pierre-Marie Roy, MD. Systematic Review and Meta-Analysis of Pregnant Patients Investigated for Suspected Pulmonary Embolism in the Emergency Department. Academic Emergency Medicine 2014;21:949-959

Question: Does pregnancy actually increase the relative risk of pulmonary embolism in healthy pregnant women?

Introduction: Pregnant women who present to the ED with signs or symptoms of a PE pose a difficult diagnostic challenge to the ER physician who must balance the need to avoid radiation and contrast exposure to the mother and fetus against the specter of missing a PE diagnosis that if left untreated could harm two patients simultaneously. Clinicians may perceive that pregnant patients have a high risk of PE because of epidemiological data. This shows that pregnancy and post partum state increases the risk of PE. However, if you remove the postpartum state and isolated DVTS the absolute risk of PE is relatively small. In fact in a meta-analysis of over 23 epidemiologic studies only 3 of 10,000 pregnancies resulted in PE. This study hypothesized that ER physicians over estimate the risk of VTE (venous thromboembolism) in pregnant patients with PE symptoms and therefore order diagnostic testing more liberally resulting in low outcome rates of VTE.

Methods: This paper did a literature search of ED patients evaluated for suspected PE that did not exclude pregnant patients. 2,816 total studies were found. Two authors were selected who reviewed the results for relevance and independently read the titles and abstracts of all retrieved citations. 2,613 articles were excluded as they were not relevant. 178 Full length studies and abstracts were read by the two and were further stratified down to 17 total articles agreed on by both authors as relevant to the study. In the 17 full length studies a total of 25,339 subjects were evaluated in the ED for a PE including 2,636 who had a VTE. A total of 506 patients were pregnant representing 2% of all the patients. All 506 pregnant patients underwent pulmonary vascular imaging.

Results: The frequency of VTE positive diagnosis among 24,833 non-pregnant patients was 12.4% and the frequency of VTE+ diagnosis among the 506 women was 4.1% The RR of pregnancy on VTE diagnosis in symptomatic ED patients was .60 and the fixed effects RR was .45.

Discussion: This study is a systematic literature review and meta-analysis of 25,339 patients found that among symptomatic ED patients elected for testing for PE, approx 2% were pregnant. When comparing pregnancy to non-pregnant patients the RR for VTE positive was 0.6, significantly less than 1. The rate of VTE diagnosis from 24,839 non-pregnant patients 12.4% compared with a lower rate of VTE diagnosis in pregnant patients of 4.1%. This paper challenges the belief that pregnancy should be considered a high risk condition in the approach to patients with PE. There are important negative effects on mom and child when radiation and contrast are introduced. While this study was a literature search the number of subjects included was high making this study generalizable to the standard population. I believe that perhaps the testing should include a threshold adjusted D-dimer or a protocol whereby lower extremity DVT workup is the initial diagnostic test. The most difficult decision to make in our litigious society is when to not scan the patient. If the diagnosis is missed the mortality rate is quite high and missed in pregnancy would clearly be malpractice.