MANAGING THE INDETERMINATE CT PULMONARY ANGIOGRAM: DO WE GET IT RIGHT?

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Introduction Around 5% of CT pulmonary angiograms (CTPA) are indeterminate, usually due to incomplete contrast enhancement of pulmonary arteries, motion artefact or difficulty interpreting small peripheral filling defects. While BTS guidelines propose good quality CTPA as sufficient grounds to not treat for pulmonary embolism (PE), response to indeterminate CTPA is not addressed.

Methods Records of 51 patients with indeterminate CTPA were retrospectively reviewed for radiologist’s reporting, clinicians’ response to indeterminate CTPA’s.

Results Reports included “no obvious PE within the limitations of the study” (n=14), “unable to exclude segmental/subsegmental PE” (n=5), and “equivocal filling defects of uncertain significance” (n=4). 17/51 (33%) stated: “PE cannot be excluded.” Further imaging was suggested in only 2 cases. Clinicians documented recognition of technical shortcomings, reported by radiologists, in only 16/51 cases (31%), and recorded “no PE” in 29/51 (57%). Clinicians assessed pre-test probability in 5/51 (8%). 36 patients had the diagnosis of PE dismissed without further tests, of whom 26 were treated for other acute cardio-respiratory conditions revealed on CTPA. 0 had one or more additional tests (repeat CTPA, V/Q scan or Doppler u/s), confirming thromboembolic disease in 2. Further investigation was significantly more likely following scans stating “PE cannot be excluded” than other reports; both overall (47% vs 6%, p<0.001), and excluding patients with alternative acute cardio-respiratory diagnoses (66% vs 15%, p<0.005). 3 patients with indeterminate filling defects were anti-coagulated for PE. Of 2 patients with no filling defects reported, but anti-coagulated on grounds of clinical suspicion and indeterminate scan, 1 presented 2 weeks later with bleeding complications. Anticoagulation was discontinued when review and further investigation suggested PE was, in retrospect, unlikely. One untreated patient re-presented after 2 weeks with non-fatal PE.

Conclusion There is a lack of clear guidance, and considerable variation in radiological reporting of, and clinicians’ response to indeterminate CTPA. Un-ambiguous reporting, repeat clinical assessment, appropriate consideration of alternative diagnoses, and further investigation where appropriate may reduce the risks of missed diagnosis or unwarranted anti-coagulation.