Purpose

CT Pulmonary Angiograms (CTPAs) are a common investigative test in the acute setting to confirm the presence of a suspected pulmonary embolus (PE). Approximately 200 CTPAs are performed every month across our three sites.

The RCR suggests that positivity rates for PE in CTPAs should be between 15.4% and 37.4% (RCR Audit Live August 2010).

Anecdotally, we felt that our positivity rates were lower than this. We therefore wanted to audit to see if this was the case and whether it was a result of inappropriate requesting when reviewed against current trust guidelines, which mirror the most recent NICE guidelines.

Methods and Materials

- Obtain data for 200 sequential CTPAs performed at our trust in 2017, excluding follow-up scans in patients with known PEs or those referred by the pulmonary hypertension clinic.
- To assess whether a chest radiograph had been performed within the preceding 72 hours.
- To assess if two-level Wells score was provided in the clinical information and if unlikely for a PE, was a d-dimer result provided and was it raised.
- To see if the CTPA was positive for PE.

Results

Only 4% of patients had a two-level wells score on their request and 21% of patients had not had a chest radiograph within 72 hours prior to the CTPA. A documented raised D-dimer was present in 28% of cases.

The positivity rate for PE on the CTPA study was 12%.

For patients who followed the correct pathway according to Trust/NICE guidelines, positivity rate increased to 29%.

Conclusion

Currently our trust has a 12% positivity rate for CTPAs which is below RCR recommendations (15-37%). This more than doubled when the patient appeared to follow the correct diagnostic pathway.

Emphasis should therefore be placed on making clinicians follow local guidelines and radiologists only vetting CTPAs if an appropriate clinical assessment has been performed. This would help in avoiding unnecessary high-dose examinations, especially if PE can be safely excluded or an alternate diagnosis can be made.

Further Action

- Findings presented at Grand Round
- Liaise with Haematology team regarding the current thrombosis pathway
- Consider changing the way we vet CTPAs with the emphasis on the clinician having completed a thorough assessment first
- Linking d-dimer requests back to a documented Wells score, as isolated d-dimer results seem unnecessary high-dose examinations, especially if PE can be safely excluded or an alternate diagnosis can be made
- Re-audit once changes have been agreed upon and implemented

Table 1: Detailed breakdown of individual components of Two-level Wells scores

Table 2: Comparison of Charing Cross & Hammersmith Hospital results with St Mary’s Hospital

Table 3: Comparison of patients who had CXR within 72 hours of CTPA with those who didn’t