The Investigation of Suspected Pulmonary Embolism with CTPA: An Audit and Clinicians’ Perceptions

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Introduction

The two level Manchester Modified Wells score is used at Salford Royal Hospital3. It is used in combination with D-dimer test if appropriate, to aid decision-making in requesting computed tomography pulmonary angiography (CTPA) in patients with suspected pulmonary embolism (PE).

CTPA is favoured due to easy availability and overall sensitivity of 89-100%, However it is not a low risk imaging modality, as it exposes patients to ionising radiation3. In addition, it can have health implications for young patients especially pre-menopausal women and patients with impaired renal function. It is therefore important that patients are managed appropriately to avoid unnecessary expenditure, and reduce patients’ exposure to risks1.

Aims

Primary – To compare current clinical practice for investigating a suspected PE in accordance with the available guidelines

Secondary - To determine clinicians’ perceptions on the investigation of suspected pulmonary embolism using a questionnaire

Criteria

1- Patients should have a clinical history and examination.
2- Patients should have a chest x-ray.
3- Patients with a suspected PE should have a pre-test probability (Wells score) documented in the notes.
4- Patients with a CTPA request should have a high pre-test probability of PE (using wells score) or a High D-dimer result.

Standards

• 100% for each criterion
• 100% for all 4 criteria

Methodology

• April 2014-April 2015
• Patients Coded – “CTPA” – “EAU”

• Total patients = 212
• 10 patients excluded
• (Had CTPA requests cancelled/ wrongly coded)
• 202 patients
• Retrospective analysis of notes

A 5 – question survey was distributed to clinicians on the Emergency Assessment Unit.

Results of Primary Aim [audit]

The results show that the guidelines were followed in 23% of patients. This was lower than the standard set for the audit. Although the positive CTPA rate for PE was acceptable (24.26% (n=49)) clinicians need to be encouraged to follow guidelines or document valid reasons to stray from them.

The use of the Wells score was underutilised as just over 24% of the patients had it documented in their notes. This was an interesting finding as 87% of clinicians were aware of the Wells score for ruling out or planning further investigations for suspected PE.

79 patients (39%) did not have a high pre-test clinical probability or a high D-dimer or a combination of both. A CTPA was requested based on their clinical history. Among these patients, 13 patients were diagnosed with PE. The most common reason was “acute hypoxia” and signs of DVT. This is significant as 1/4 of positive scans were picked up “outside the protocol”. This highlights the use of clinical judgement to manage patients appropriately.

Results of Secondary Aim [questionnaire]

• 30 questionnaires were returned over a 3 week period by staff on the Emergency Assessment Unit.
• The sample consisted of junior doctors, Advanced Nurse practitioners, trainees above FY2 and consultants.

“Are you aware of the trust guidelines?”

100% of the health care professionals said D-dimer is their choice of investigation when there is a low risk of PE.

100% were aware that CTPA was the non-invasive investigation of choice.

Discussion

The results of the audit show that the guidelines were followed in 23% of patients. This is lower than the standard set for the audit. Although the positive CTPA rate for PE was acceptable (24.26% (n=49)), clinicians need to be encouraged to follow guidelines or document valid reasons to stray from them.

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Recommendations

1- To modify CTPA request form to necessitate risk stratification prior to a CTPA request. (Example below)

2- To display a quick reference guide on the trust intranet

3- Provide “educational” tutorials for clinicians to refresh their knowledge for managing PE.

Re-audit

The results and recommendations from this audit were presented to the staff on 16th July 2015. They plan to re-audit in 12 months time.

Acknowledgements

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References

3 Davies HE, Weather CG, Gleeson PJ. Risks of exposure to radiological imaging and how to minimise them. British Medical Journal. 2011;342:589–593