Ambulatory Management of Suspected Pulmonary Embolism
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Introduction

Patients with suspected pulmonary embolism (PE) commonly present to the Acute Medical Unit (AMU) and are traditionally managed as an inpatient. Outpatient management of deep vein thrombosis (DVT) with low molecular weight heparin (LMWH) is well established. As PE is part of the same disease process, there has been increasing interest in the ambulatory management of selected low risk patients.

Practice guideline recommendations from the British Thoracic Society (BTS) in 2003 and European Society of Cardiology (ESC) 2008, support extending outpatient care to stable patients with PE.1,2 A recent international, randomised, non-inferiority trial of outpatient versus inpatient treatment of low risk PE, indicated that outpatient care can safely and effectively be used.3 Evidence for the ambulatory investigation of suspected PE is limited.4,5

Protocol used at Sandwell General Hospital

- In 2008, we implemented a protocol to identify low risk patients with suspected or confirmed PE, who can be managed on an ambulatory basis on the Acute Medical Unit (AMU).
- The current practice is for ambulatory management of all low risk patients with suspected PE who have documentation in the notes showing none of the prognostic variables outlined in the protocol above.
- The practice guideline recommendations for outpatient anticoagulation.

Aim

- The aim of this audit was to assess whether the protocol was being correctly adhered to.
- The required standard was for all ambulatory patients to have documentation in the notes showing none of the prognostic variables in the protocol.
- Notes were reviewed for adverse events at 1 and 12 weeks.
- The results were compared to those from the previous audit in 2008.

Methods

- It was a retrospective audit analysing all ambulatory patients with suspected PE between January 2009 and March 2011.
- Patients were identified by searching through a diary used to book ambulatory patients in for review on the AMU.
- The notes were analysed to assess whether the prognostic variables had been completed for each patient confirmed as having a PE.
- Any adverse events at 1 and 12 weeks were determined by searching through the patient records.
- Any patient admitted to hospital was excluded.

Results (1)

- 174 patients with suspected pulmonary embolism were investigated on an ambulatory basis over 15 months.
- In 53 patients (30%) PE was confirmed after imaging.
- Of these patients, 33 were included in the analysis because 20 notes were unavailable.
- The mean age was 60 years (range 25 – 84) with a median of 62.
- The were 16 (48%) male patients and 17 (52%) female patients

Results (2)

Audit 2009-11

- Adherence to protocol 2009-11
- The graph above shows that the prognostic variables were not completely adhered to for heart rate (21%), hypoxia (18%), respiratory rate (3%), right ventricular dysfunction (12%), Troponin T (9%), and co-morbidity (3%).
- The parameters were not completely documented for hypotension (3%), heart rate (3%), hypoxia (3%), respiratory rate (6%), RVD (6%) and Troponin T (39%).

Audit 2008

- Adherence to protocol 2008
- All documented prognostic variables were adhered to.
- However, 72% and 14% of patients did not have Troponin T or evidence of RVD documented respectively.

Discussion

- It is reassuring that there were no major adverse events or deaths at one week; the duration patients are traditionally admitted to hospital.
- There is a deterioration in the adherence to the protocol between 2009-11 compared to 2008. This may be due to increased detection through a larger group of patients being analysed in the most recent audit (33 versus 7). It may also be due to falling awareness of the protocol.
- The lack of adherence to the prognostic variables is of concern. However, for heart rate and respiratory rate, we used the most abnormal readings recorded for the audit, but these were transient findings; resolving before discharge.
- The threshold for hypoxia was set at oxygen saturations <94%. For those sent home below this limit, no patient had levels less than 90%, which is in keeping with the Pulmonary Embolism Severity Index (PESI).
- Lack of completion of Troponin T is a concern. This may be due to lack of awareness of the protocol or clinicians may think it is not required (it is not part of the PESI). Patients discharged with a positive Troponin T may be explained by a change to a high-sensitivity assay (<14ng/L) and this is a point requiring clarification.
- RVD was based partly on ECG evidence (RBBB), which is not specific and could be due to old changes.
- There needs to be renewed education to promote adherence to the protocol, in particular completion of Troponin T. This can be addressed at hospital induction, intranet medical guidelines and posters in the AMU.

Conclusion

- The audit suggests that the protocol can identify low risk patients suitable for ambulatory management of suspected PE.
- However, continued audit and education are required to ensure that the algorithm is adhered to.

References

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