A VERY SHARP NEEDLE IN A VERY BIG HAYSTACK…

(AORTIC DISSECTION IN THE EMERGENCY DEPARTMENT)

[redacted]
University Hospitals Bristol & Weston
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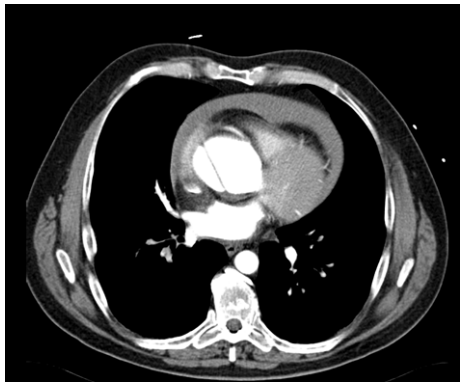
Aortic dissection

- **Aortic dissection** occurs when a tear in the inner wall of the aorta causes blood to flow between the layers of the wall of the aorta and force the layers apart
- Relatively rare – 1:10,000 ED attendances
- Bimodal presentation – young patients in 20's, and older 40-70yrs
- M 3:F 1
- Nationally ½ missed at initial presentation
- 1/3 given wrong diagnosis, often gastritis



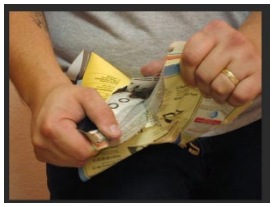
Textbook of cardio thoracic surgery

- Clinical features
  - Although AD can be painless, most often it is associated with the acute onset of severe, tearing, migratory pain. These symptoms may be associated with unequal extremity blood pressures as well as a changing pulse exam (as the dissection evolves), either hypertension or hypotension, and/or a new murmur of aortic regurgitation. Although the presentation can be dramatic, with associated end-organ complications, such as syncope, cerebrovascular accident, anuria, or ischemic bowel, equally once the acute pain has passed the diagnosis may be subtle. Misdiagnosis of AD as ACS or other conditions such as pulmonary embolus is the rule not the exception. Accordingly, a high index of suspicion and low threshold to perform appropriate imaging studies are critical. The mortality rate associated with AD untreated is estimated at 1 to 2 percent per hour during the first 24 to 48 h and 75 percent at 2 weeks.

RISK factors in Aortic dissection

- Hypertension
- Marfans syndrome
- Bicuspid valve disease
- Coarctation of the aorta
- Cocaine use
- Pregnancy / post partum
- Weight lifting

Risk factors PITFALLS



- If the patient has a known risk factor, or known thoracic aortic aneurysm, the initial suspicion of index is easier to trigger
- In missed cases there is often NO risk factor identified at the time of presentation
- Dissection can happen in a normal calibre aorta, and doesn't have to have a pre existing aneurysm

Clinical features that are HIGH RISK

- CHEST / ABDOMINAL / FLANK / BACK pain

- ABRUPT/ VERY SUDDEN ‘thunderclap’
- SEVERE/ RIPPING OR TEARING

- ‘TERRIBLE PAIN APPEARS OUT OF NO WHERE’
- patients can tell you exactly what they were doing the second that pain started

Pitfalls in clinical features

Pain can be INTERMITTENT

AND

- Patient can look COMPLETELY WELL in between episodes of pain

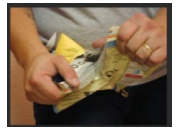
AND

Pain can MOVE/ MIGRATE

Examination features that are HIGH RISK

- Pulse deficit
- Systolic BP difference
- Chest or back pain plus focal neurological deficit (stroke)
- Aortic murmur(new)
- Hypotension or shock

Pitfalls in examination



The patient may have NONE of these

In addition ALL ROUTINE BASELINE TESTS CAN BE NORMAL

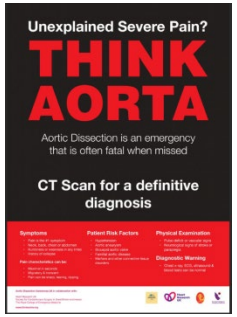
- ECG can be normal or look ischaemic (making clinician think of myocardial infarction)

- Baseline bloods normal
- Chest XRay normal or very subtle changes
- D dimer sometimes positive but not specific

Difficult diagnosis to make in ED

- Very sharp needle in a big haystack
- Many patients with chest and back pain
- 1;10,000 patients presenting to ED have Aortic Dissection

- 40 year old man, no past medical history, no pain now, normal baseline tests, with an episode of terrible abrupt onset pain



Solution

EDUCATION ABOUT PITFALLS – high index of suspicion

AND

LOW THRESHOLD TO UNDERTAKE CT AORTA

= culture change

BRI ED

We have increased scanning by 300% since 2012, now scanning 350+ per year

HOW ???

Make the diagnosis every 6-8 weeks

Culture change

- GP support unit request a CXR
- ‘42 year old man, Sudden onset of chest pain radiating to back, now resolved
- Severe enough to make him drop to his knees’

- Radiology report
- XR Chest :
- The heart size is within normal limits. No focal lung lesion is demonstrated.
- Plain film was sent to GP reporting box and reviewed on 19/5/15.
- The history above is concerning for aortic dissection, hence at 1215 I spoke to GPSU Dr who saw patient originally, patient to have CT aorta’

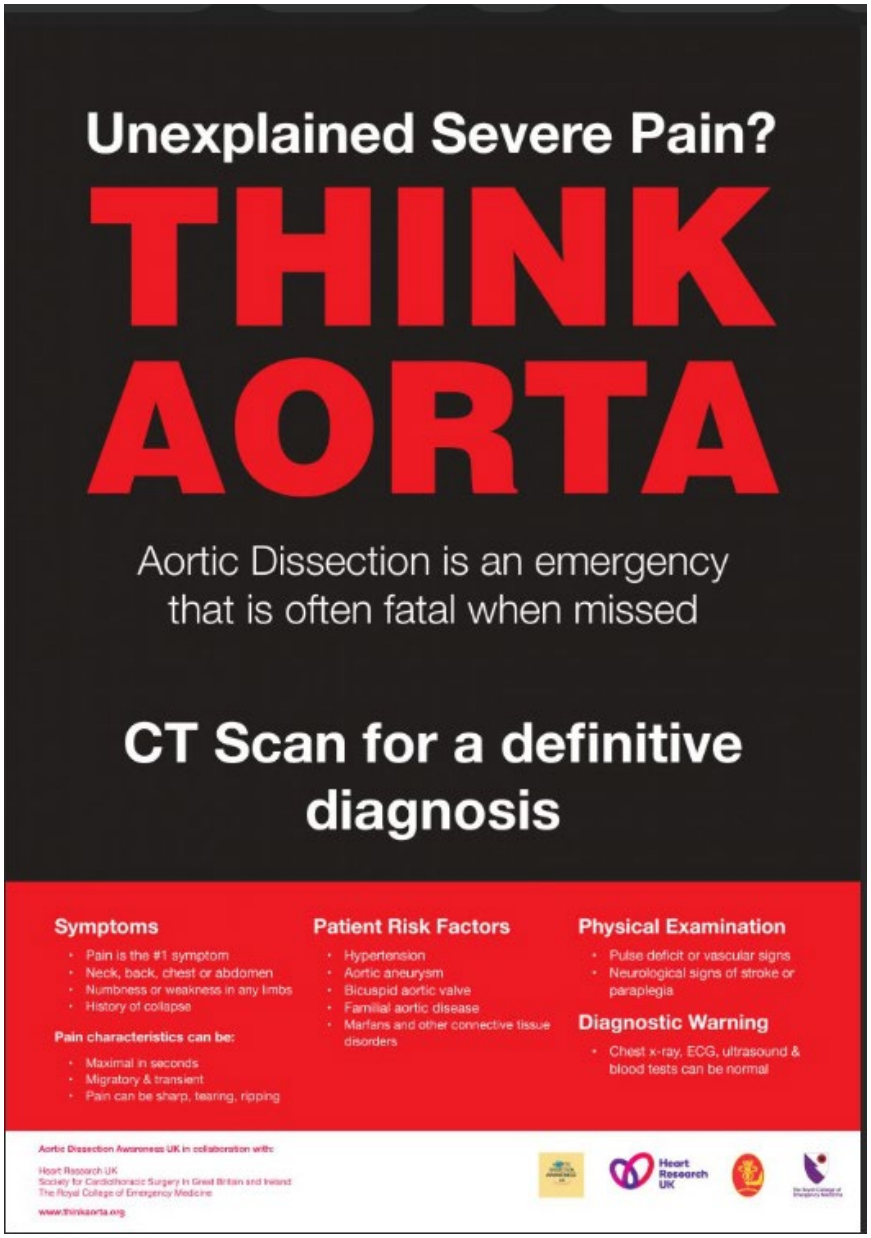
Bottom line

HIGH INDEX OF SUSPICION

AND

LOW THRESHOLD FOR SCAN

6,000 downloads last year…


Unexplained Severe Pain?
THINK AORTA
Aortic Dissection is an emergency that is often fatal when missed
CT Scan for a definitive diagnosis
Symptoms
Pain is the #1 symptom
Neck, back, chest or abdomen
Numbness or weakness in any limbs
History of collapse
Pain characteristics can be:
Maximal in seconds
Migratory & transient
Pain can be sharp, tearing, ripping
Patient Risk Factors
Hypertension
Aortic aneurysm
Bicuspid aortic valve
Familial aortic disease
Marfans and other connective tissue disorders
Physical Examination
Pulse deficit or vascular signs
Neurological signs of stroke or paraplegia
Diagnostic Warning
Chest x-ray, ECG, ultrasound & blood tests can be normal
Aortic Dissection Awareness UK in collaboration with:
Heart Research UK
Society for Cardiothoracic Surgery in Great Britain and Ireland
The Royal College of Emergency Medicine
www.thinkaorta.org
Heart Research UK

- https://www.rcemlearning.co.uk/foamed/aortic-dissection/
- https://www.rcemlearning.co.uk/foamed/june-2018/#1527750807337-12d9d925-4323