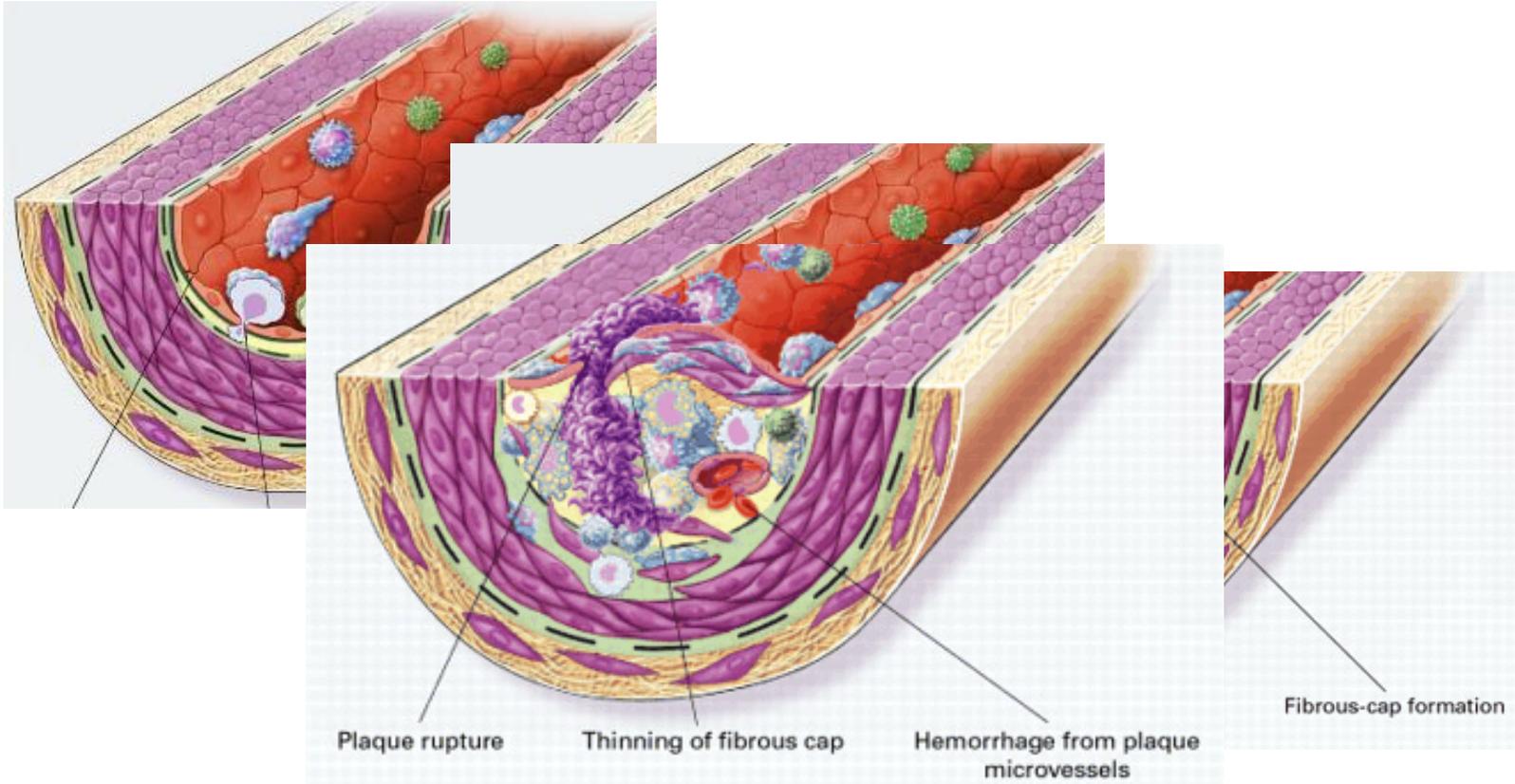


Coronary Heart Disease

Iqbal Malik

Pathophysiology IHD



Case chest pain

Douglas Ian
Patient ID: 26/00128
07.11.2003
10:58:26

100 bpm
02:40 158/70 mmHg

RECOVERY
#1
05:00

BRUCE
0.0 mph
0.0 %

Measured At 60ms Post J (10mm/mV)
Auto Points

Lead	ST(mm)	Lead	ST(mm)
I	0.35	V1	1.50
II	0.40	V2	5.25
III	0.00	V3	4.65
aVR	-0.40	V4	2.55
aVL	0.20	V5	0.80
aVF	0.20	V6	0.30



12-LEAD ECG

Harley Street Investigations

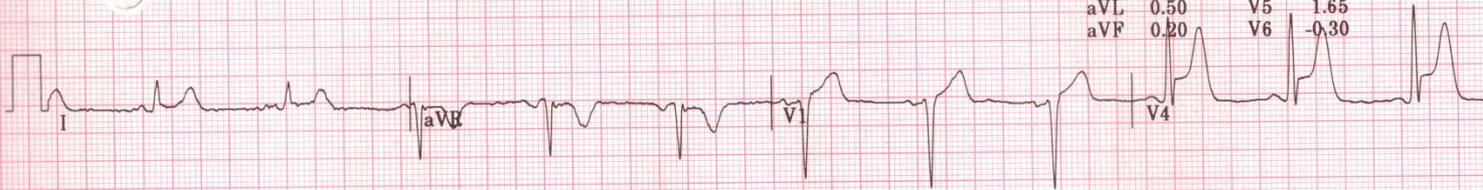
Douglas Ian
Patient ID: 26/00128
11.2003
14:25

65 bpm
05:06 120/70 mmHg

TEST END

Measured At 60ms Post J (10mm/mV)
Auto Points

Lead	ST(mm)	Lead	ST(mm)
I	0.80	V1	2.40
II	0.60	V2	7.65
III	-0.20	V3	8.70
aVR	-0.70	V4	4.90
aVL	0.50	V5	1.65
aVF	0.20	V6	-0.30



Question -interactive

- What is the result of the exercise test?
- 1. negative
- 2. positive
- 3. equivocal
- 4. other

Q2 answer

- **STEMI!**

Clinical pattern	Definition
Chest pain + ST elevation	ST segment elevation myocardial infarction (STEMI)
Chest pain and other ECG changes + enzyme rise	Non-STEMI
Chest pain and other ECG changes + no enzyme rise	Troponin negative acute coronary syndrome (ACS)

12-LEAD ECG

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What tests are available?

Functional

- Treadmill ECG
- Stress Echo
- MPS (nuclear)
- *Stress MRI*

Anatomical

- Invasive Angiography
- Echocardiography
- *CT angiography*
- *MRI angiography*
- *CT calcium score*

Case

- 45 year old Asian Busy Job
- Chest pain at night-lasts 10 minutes
- Retrosternal ache
- Non exertional
- FH MI age 50 in uncle
- What would you do?



- Anginal pain is:
 - constricting discomfort in the front of the chest, neck, shoulders, jaw or arms
 - precipitated by physical exertion
 - relieved by rest or GTN in about 5 minutes.
- typical angina have all the above anginal pain features,
- atypical angina have two
- non-anginal chest pain have one or none of the features.
- Don't differentiate age/race

Interactive Choices

- Nothing
- ECG
- ETT
- EBCT Ca score
- CT coronary angiogram
- MPS
- Coronary angiogram

New guidelines

Table 1 Percentage of people estimated to have coronary artery disease according to typicality of symptoms, age, sex and risk factors²

Age (years)	Non-anginal chest pain				Atypical angina				Typical angina			
	Men Lo	Men Hi	Women Lo	Women Hi	Men Lo	Men Hi	Women Lo	Women Hi	Men Lo	Men Hi	Women Lo	Women Hi
35	3	35	1	19	8	59	2	39	30	88	10	78
45	9	47	2	22	21	70	5	43	51	92	20	79
55	23	59	4	25	45	79	10	47	80	95	38	82
65	49	69	9	29	71	86	20	51	93	97	56	84

For men older than 70 with atypical or typical symptoms, assume an estimate > 90%.
 For women older than 70, assume an estimate of 61–90% EXCEPT women at high risk AND with typical symptoms where a risk of > 90% should be assumed.

Values are per cent of people at each mid-decade age with significant coronary artery disease (CAD).
 Hi = High risk = diabetes, smoking and hyperlipidaemia (total cholesterol > 6.47 mmol/litre).
 Lo = Low risk = none of these three.

The shaded area represents people with symptoms of non-anginal chest pain, who would not be investigated for stable angina routinely.

Note: These results are likely to overestimate CAD in primary care populations.

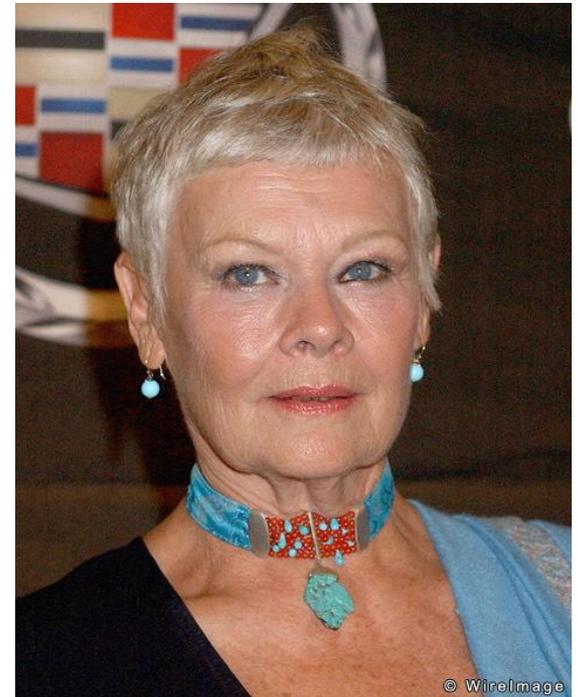
If there are resting ECG ST-T changes or Q waves, the likelihood of CAD is higher in each cell of the table.

Likelihood CAD

- 61–90%, offer invasive coronary angiography as the first-line diagnostic investigation if appropriate (see recommendations 1.3.4.4 and 1.3.4.51).
- 30–60%, offer functional imaging as the first-line diagnostic investigation (see recommendation 1.3.4.61).
- 10–29%, offer CT calcium scoring as the first-line diagnostic investigation (see recommendation 1.3.4.71).
- <10%-reassure and no investigations

Case

- 73 female smoker
- Read the daily mail on PCI
- Chest tightness at night-
 - lasts 10 minutes
- Occasionally after running



New guidelines

Table 1 Percentage of people estimated to have coronary artery disease according to typicality of symptoms, age, sex and risk factors²

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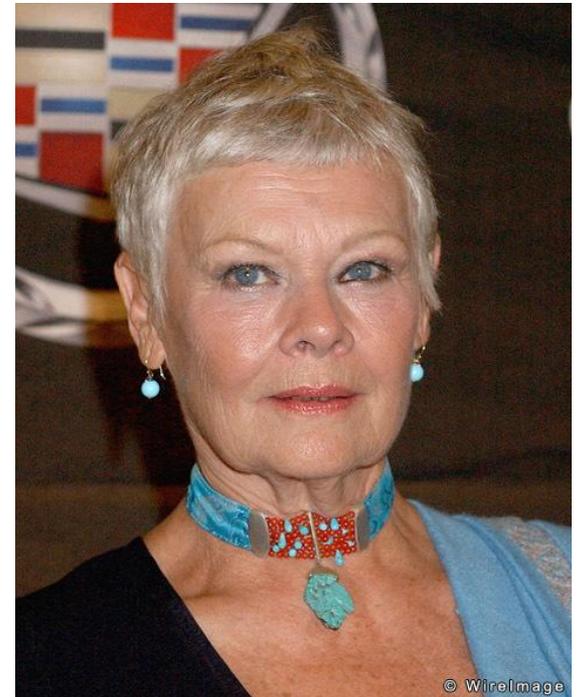
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Case

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- Chest tightness at night-
 - lasts 10 minutes

- Angiogram?



Drugs

Anti-Anginal

- Beta-blockers 1st
- CCB
- Nicorandil
- Nitrates
- Ivabradine
- Ranolazine

Disease modifying

- Aspirin
- Statin
- ACEI
- If ACS
 - Clopidogrel
 - Prasugrel
 - Ticagrelor

Refer?

- ECG is abnormal
 - eg if there is evidence of a previous MI
- Previous MI, CABG or angioplasty
 - Recurrence
- Doesn't respond to medical treatment
- You suspect aortic stenosis
- There are other significant adverse risk factors which are difficult to control, co-morbidities or a strong family history
- There are problems with employment, life insurance or unacceptable interference

All need a firm diagnosis- Use the Chest Pain Clinic

Conclusions

- Important to investigate and treat
- Plumbing is not the whole solution
- NHS heart tablet:
 - *Aspirin+statin+*
 - *ACEI+beta blocker +*
 - *(clopidogrel)*

[www.londoncardiovascularclinic.c
o.uk](http://www.londoncardiovascularclinic.co.uk)

Heart Failure

Breathlessness

- Lungs
- Heart
- Unfit
- Anaemia/other causes

Swollen ankles

- Heart failure
- Medication side effect
- Venous congestion
- Immobility

Definition HF

- Inability of the heart to cope with the demands made on it
- Poor pump- systolic or diastolic
- Valve disease
- Anaemia
- High output cardiac failure

HF investigations

- ECG + BNP/ NTproBNP (where available)
- BNP
 - Sensitive ++
 - Specific No
 - If both the ECG and BNP/ NTproBNP are normal, heart failure is very unlikely
 - If the ECG or BNP/NTproBNP are abnormal and the patient is symptomatic, refer for echocardiogram to obtain a definitive diagnosis.
- Consider carrying out the other investigations to exclude other pathology

HF Rx

- Diuretics
- Digoxin

PROGNOSTIC

- ACEI/ARB
- Betablockers
- Spironolactone
- Nitrates plus hydralazine
- Ivabradine?

Interactive Question

- How much more life does beta blockade give?
- 1 month
- 6 months
- 1.5x expected life
- 3x expected life

Answer

- Mortality reduction beyond doubt
- 1.5X extension
 - 1 year becomes 18 months
 - 2 years becomes 3 years

HF- reversible causes?

- Coronary disease
- Aortic stenosis
- Hypothyroidism

HF

- Biventricular pacing
 - Still symptomatic despite medical Rx
 - Evidence of dyssynchrony or LBBB
- Defibrillator
 - Primary prevention works
 - **Poor LV and stage 4 HF- who do you want to die?**
- Diastolic HF
 - Refer

Aortic stenosis

- Nihilism is dead
- 1 year data non-surgical patient

End point	TAVI	Standard	P value
All-cause death	30.7%	50.7%	<0.001
All-cause death or repeat hospitalisation	42.5%	71.6%	<0.001

- So refer the non-surgical pt for assessment

