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Interactive clinical reasoning around the recognition of inflammatory back pain

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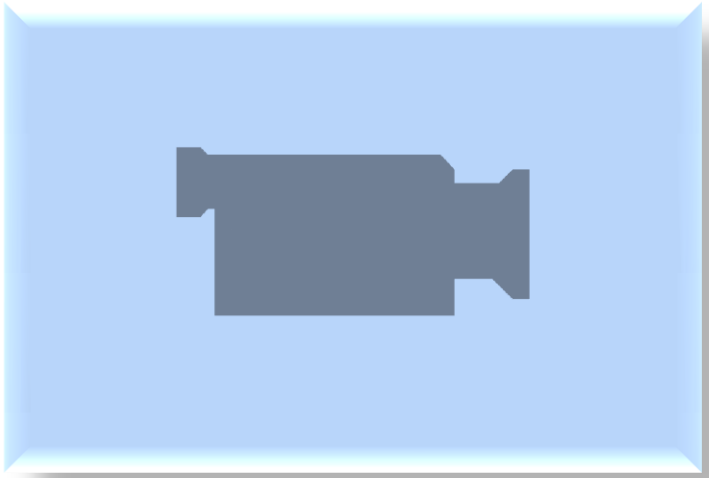
BSR
The British Society for Rheumatology

BHPR
British Health Professionals in Rheumatology

What we will cover today

- Interactive presentation on different aspects of back pain to:
  - ✓ Improve understanding and recognition of inflammatory back pain vs. mechanical back pain
  - ✓ Provide an overview of evaluation, investigation and management of patients with back pain
  - ✓ Support appropriate referral of patients to a specialist

Derek – video



Video summary

- Male, sudden onset, whilst playing football
- <40 years old
- Lumbar spine and lower limb pain and paraesthesia
- 2+/52 history
- Increasing symptoms
- Nil effect with NSAIDs
- ? Cause
- Worse with cough / sneeze

NSAID, non-steroidal anti-inflammatory drug

Question 1

Do you think that Derek's age or sex have any relevance to his back pain?

A. No

B. Yes

C. Don't know

What is back pain?

"Neither a disease nor a diagnostic entity of any sort"[1]

"A symptom which may reveal little or nothing about the nature of any underlying disorder"[2]

In most cases,
very difficult to identify a clear pathology

1. Ehrlich G, *et al*. Back Pain. *Rheum* 2003;67:26–31. 2. Adams M, *et al.* The biomechanics of back pain. 2nd ed. 2006. Edinburgh: Churchill Livingstone. p82.

Question 2

Would you consider Derek's back pain to be acute or chronic?

A. Acute
B. Chronic
C. Don't know

Definitions of back pains

Chronic back pain:
An episode lasting 12 weeks or more

Sub-acute back pain:
An episode lasting more than 6 weeks

Acute back pain:
An episode lasting less than 6 weeks

Question 3

What would the mechanism of injury tell us about the nature of this pain?

A. It is likely to be mechanical
B. It is likely to be inflammatory
C. It is likely to be soft tissue-mediated
D. It is of neurogenic origin
E. He is likely to have a fracture of his spine
F. He is likely to have a prolapsed disc
G. All of the above

Mechanism of injury

Trauma, LBP and radiculopathy

LBP, low back pain

Question 5

What would his lack of response to ibuprofen tell us?

- Nothing
- His back pain is:
- inflammatory in nature
- mechanical in nature
- Don't know

Question 6

Do you think that the GP should have considered x-ray?

A. Yes
B. No
C. Don't know

Beware inappropriate investigation

Beware the MRI!

98 asymptomatic volunteers:

- 36% had normal discs at all levels
- 52% had a bulge at one level
- 27% had a disc protrusion
- 38% had abnormality of more than one disc
- 1% had an extrusion

Jensen MC, *et al.* Magnetic resonance imaging of the lumbar spine in people without back pain. *N Engl J Med* 1994;331:69–73.

Question 7

Which do you consider to be the most important red-flag questions in this case?

A. Family history of cancer
B. Osteoporosis
C. Bladder bowel symptoms
D. Loss of lower limb sensation
E. Leg pain
F. Perineal numbness
G. Night pain

Discussion

Red flags

Red flag symptoms and signs of more serious conditions[1–3,26]

Source of back pain	History	Observation/examination
Abdominal aortic aneurysm	• Sudden onset of intermittent/ continuous abdominal pain radiating to the back • History of cardiovascular disease • Previous collapse	• Pulsating abdominal mass • Low or high blood pressure • Tachycardia (rapid heart beat)
Tumours	• Age ≥50 years • History of cancer • Unexplained weight loss	• Neurological deficits • Swollen lymph nodes
R		blood in the urine, increased abdomen size
Gastrointestinal disease	• History of peptic ulcers • Epigastric, burning pain radiating to the back • Pain associated with meal times • Vomiting blood or blood in the stool (advanced disease)	• Epigastric tenderness
Infection	• Fever/chills • Recent UTI, spinal surgery, epidural anaesthesia or skin infection • Immunosuppression • Injection drug use	• Fever (temperature >38°C/100F) • Back tenderness

If a patient has red flag symptoms consider urgent referral to **Oncology/ Gastroenterology/ Urology/ A&E as appropriate**

1. Adapted from BMJ Best Practice. Assessment of back pain. Available at http://bestpractice.bmj.com/best-practice/monograph/189/diagnosis/differential-diagnosis/by-category.html. Accessed 20.06.2013. Last updated March 2013.
2. Bangle SD et al. *Cleveland Clin J Med* 2009;76:393–399.
3. Differentiating back pain from kidney pain. Available at http://www.integrative-healthcare.org/mt/archives/2006/02/differentiating.html. Accessed 20.06.2013. Last updated February 2006.

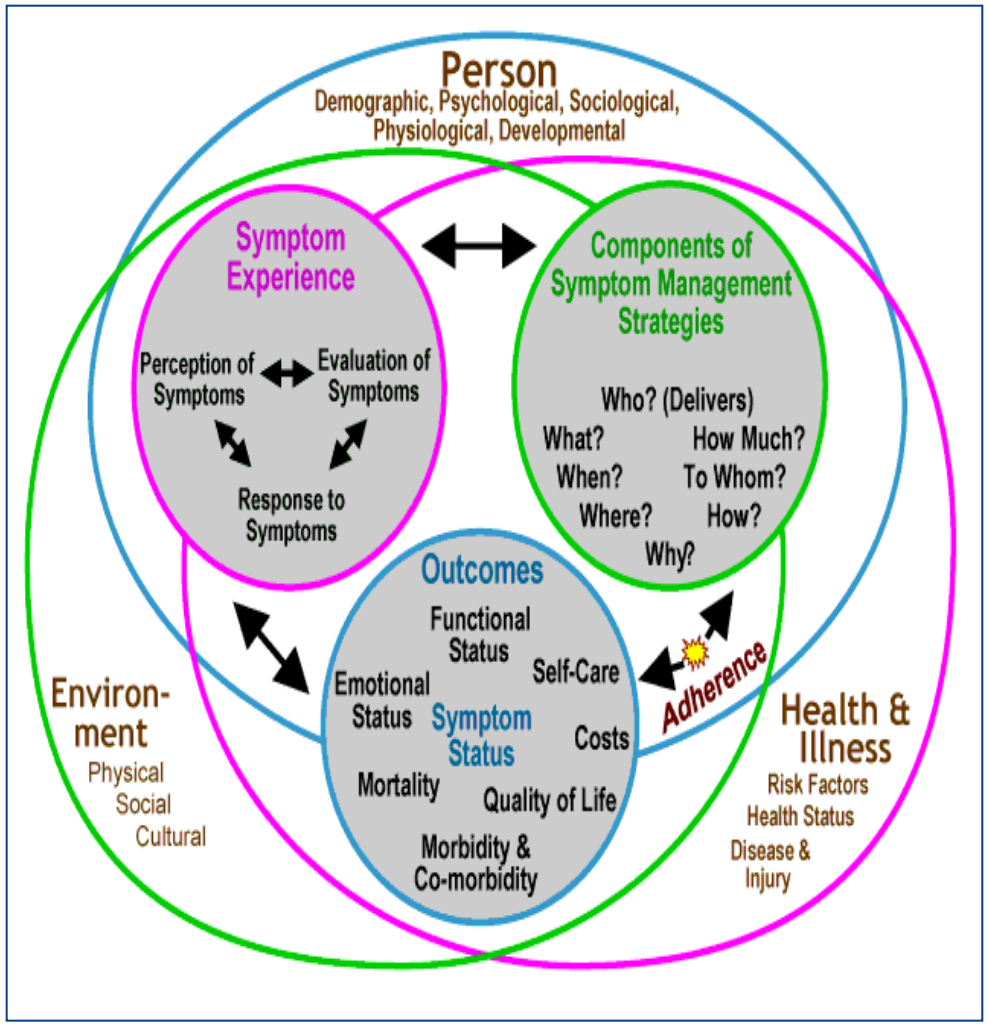
Question 8

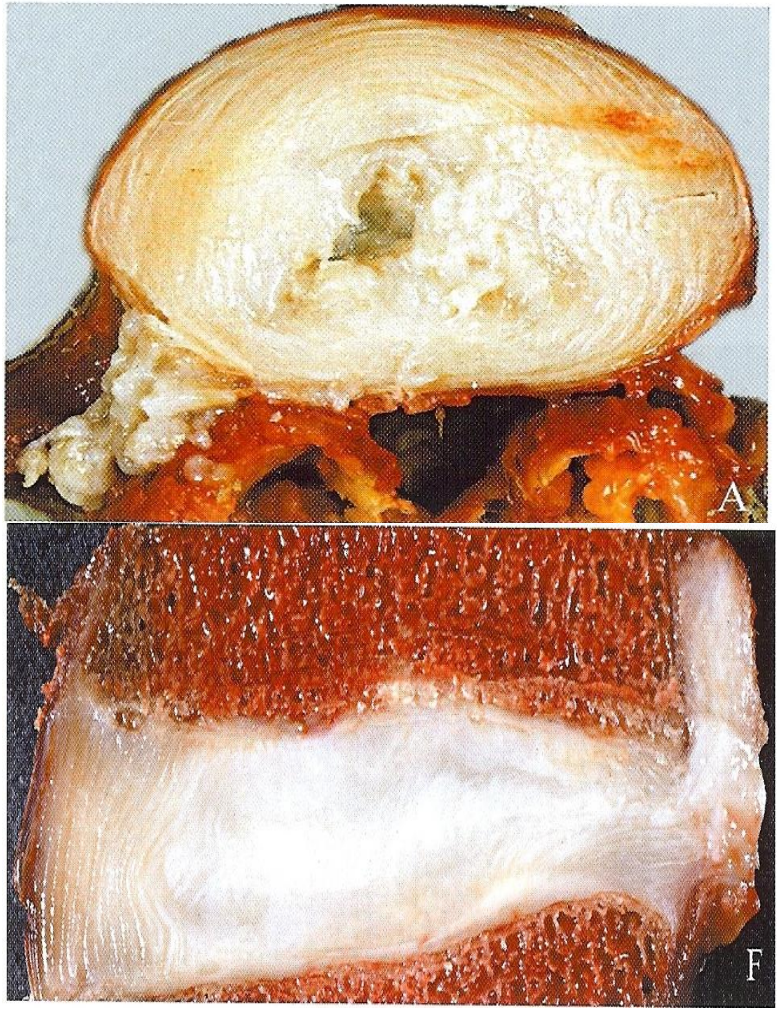
Do you think that the GP was correct in her assumption of a slipped disc?

A. Yes
B. No
C. Possibly
D. Don’t know

Bending + compression can cause disc prolapse in a single severe event...

Bio-psychosocial model



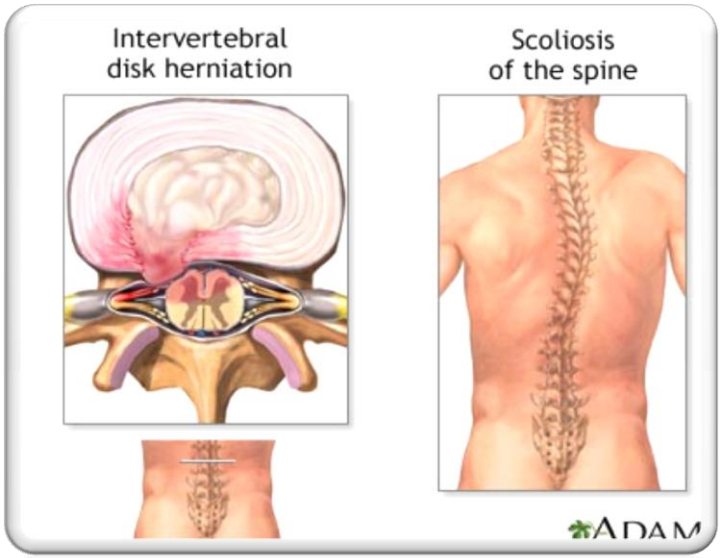


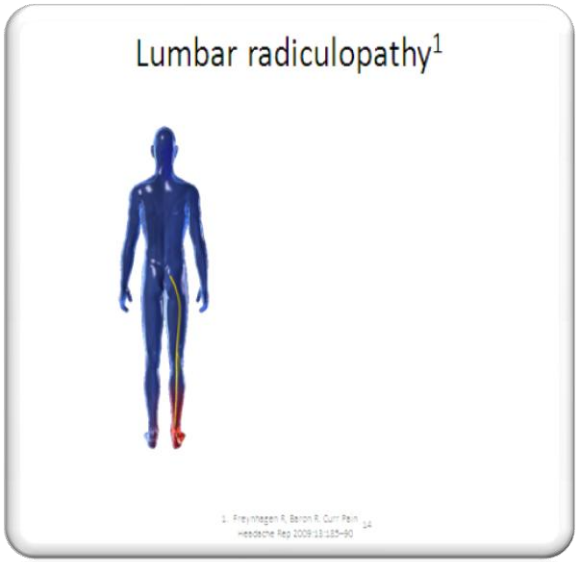
Question 9

Do you think Derek's symptoms are…?

A. Mechanical
B. Inflammatory
C. Sinister
D. Hereditary

Conclusions – Derek

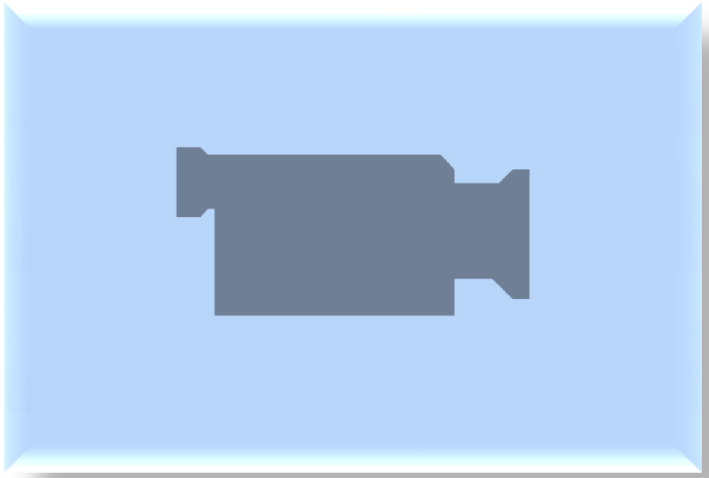




Derek was exhibiting some nerve root-mediated pain:

- Dermatomal distribution
- Invariably a disc herniation
- Physiotherapy and pain management
- If symptoms persist may require:
  - ✓ Nerve root block
  - ✓ Surgical discectomy

Emily – video



Video summary

- Female
- < 40 years old
- Lumber spine & buttock pain
- 12/52 history
- Increasing symptoms
- Nil effect with pain killers
- ? Cause
- Night pain; worse a.m. / struggles to get moving
- Better once moving

Question 1

If you were Emily's GP What action would you take?

- Prescribe Anti-inflammatory medication
- Suggest Physiotherapy
- Refer to Specialist
- Don't know
- OTHER

What type of exercise is beneficial?

Question 2

Would you consider that Emily had chronic back pain if her pain persisted for…?

A. 7 days
B. 3 weeks
C. 6 weeks
D. 3 months
E. 6 months

Back pain: acute vs chronic

- **Chronic** back pain is defined as pain which occurs for **>3 months**[1]
- Identifying back pain as **acute** or **chronic** is one of the key processes in determining the source of the pain:
  - **Acute back pain**
  - Usually mechanical, often acute in onset, arising from structural changes which may be in the spinal joints, vertebrae or soft tissues
  - **Chronic back pain**
  - Can be either mechanical or inflammatory, resulting in chronic back pain lasting >3 months[1]

It is important to distinguish **IBP vs MBP** as early as possible

The underlying causes are usually different, as is subsequent management and treatment

Sieper J et al. *Ann Rheum Dis* 2009;68:784–788.

Question 3

Emily was waking up with pain, and found it difficult to get going in the morning… When do you think these symptoms might relate to IBP?

A. If the EMS was 20 minutes
B. If she was awakening regularly with pain in the early hours
C. If she could turn over and go back to sleep quickly
D. If the EMS was > 30 minutes
E. If she needed to get out of bed and move around before getting back to sleep

EMS, early morning stiffness

Night pain and EMS

Mechanical

- Can have disturbed sleep
- Positional or gelling related
- Positional change helps
- Several times a night but short-lived duration

Inflammatory

- Worse at night when joints are still
- Often same time at night
- Often have to get up and stay up for a while
- EMS due to inflammation can last 1–3 hours

EMS, early morning stiffness

Question 4

Emily found sitting at her desk increased her back pain. If this was mechanical back pain, would you expect…?

A. The pain to improve with movement
B. Exercise to make the pain worse
C. Resting to improve the pain
D. Sitting and lying down to make the pain worse

Comparison of inflammatory and mechanical back pain

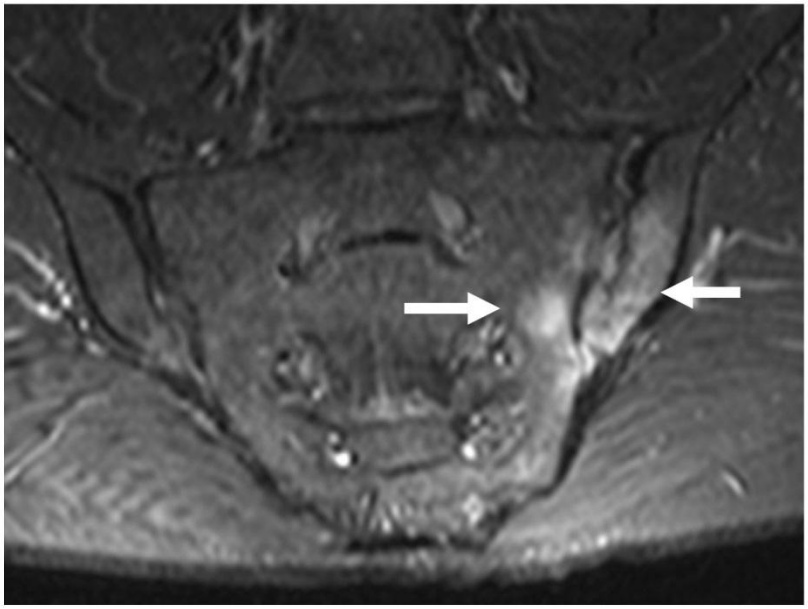
IBP	MBP
Age at onset; <40 years	Age at onset; any age
Insidious onset; less likely to be acute	Variable onset; may be acute
Pain improves with exercise	Pain may worsen with movement
Pain does not improve with rest	Pain often improves with rest
Pain at night which may awake patient during second half of the night	
Morning stiffness >30 minutes	Morning stiffness <30 minutes

Question 5

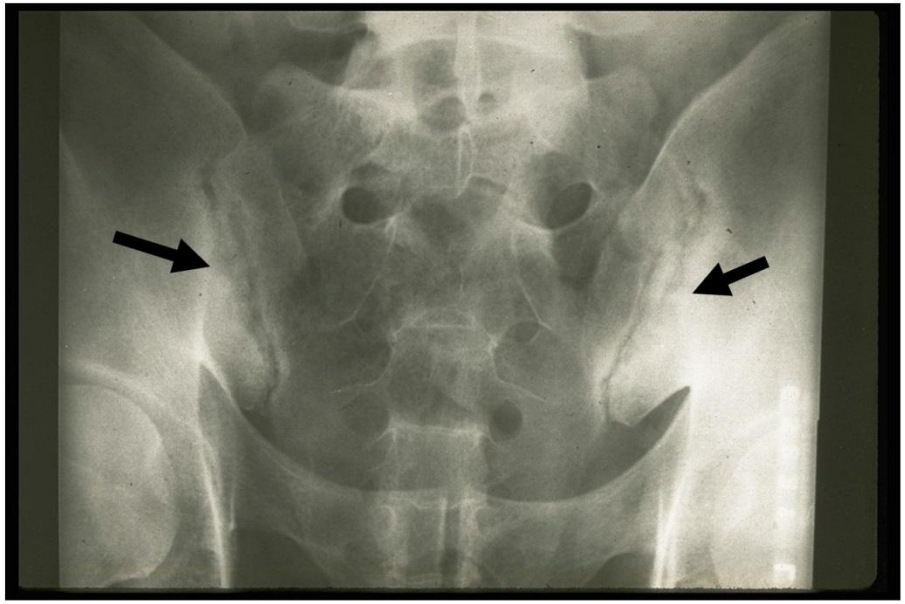
Which of these symptoms might indicate sacroiliitis?

A. Lateral thigh pain
B. Foot pain and numbness
C. Alternating buttock pain
D. Pain across the thorax
E. Pins and needles down the back of the leg
F. Pain over the sacrum

Sacroiliitis by MRI and X-ray in Patients with Axial Spondyloarthritis



Active inflammatory sacroiliitis without bony changes



Sacroiliitis with bony changes (grade II)

Question 6

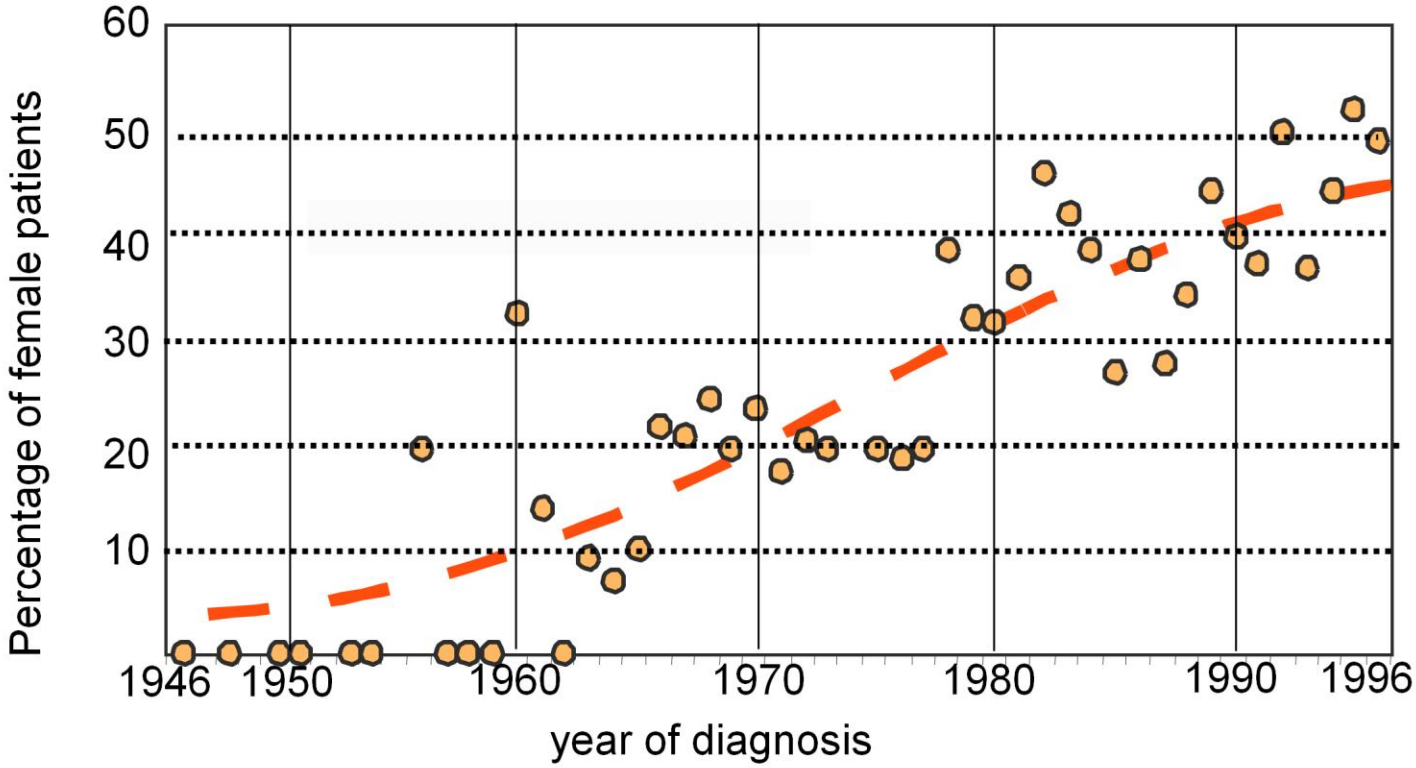
Do you think that Emily's age and sex have any relevance to her back pain?

A. Yes

B. No

C. Don't know

Percentage of Female AS Patients is Dependent on Year of Diagnosis



In recent years, the gender ratio approached 1:1.

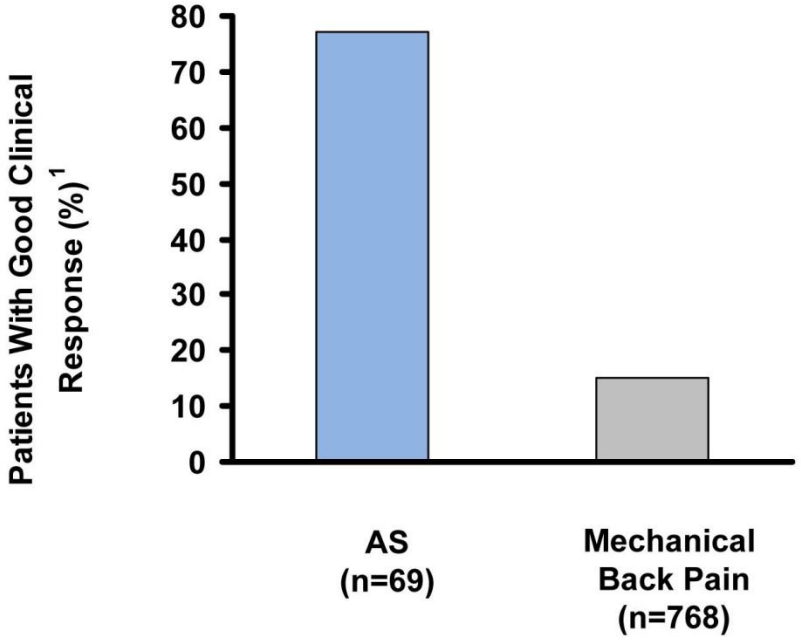
Feldtkeller E. Aktuelle Rheumatologie 1998;23:176–81
Feldtkeller E et al. Curr Opin Rheumatol 2000;12:239-47

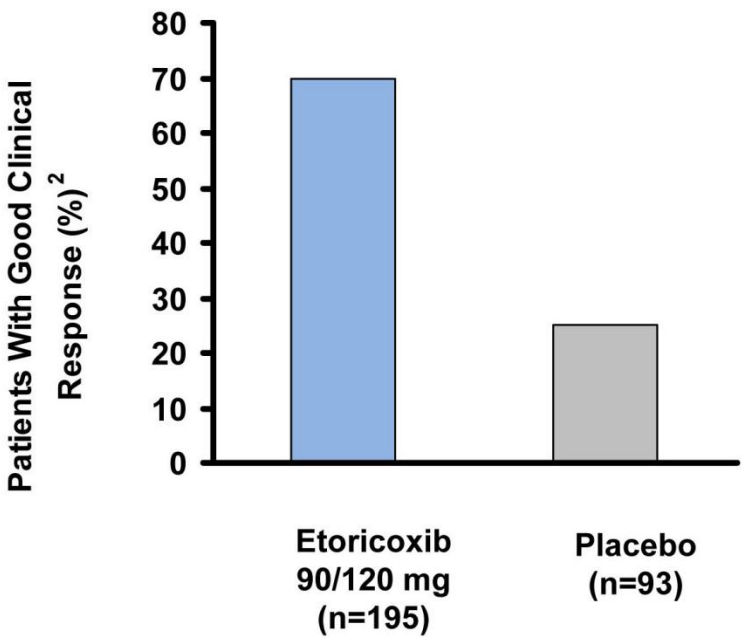
Question 7

Emily had an initial response to NSAIDs, but with time they were not effective. What would you think this tells us?

A. That her initial response was placebo only
B. Nothing
C. That her symptoms may be mechanical in nature
D. That her symptoms are inflammatory in nature
E. That the dose given was not sufficient

Efficacy of NSAIDs for the Treatment of Patients with Ankylosing Spondylitis





1. Amor B et al. Rev Rheum Engl Ed 1995;62:10-5
2. van der Heijde D et al. Arthritis Rheum 2005;52:1205-15

Question 8

Do you think examination of Emily would have helped to come to a conclusion?

A. No

B. Yes

C. Don't know

Identifying inflammatory back pain

ONE	**Did your back pain start when you were aged younger than 40?**
• Inflammatory back pain **usually begins in the third decade of life** and is unlikely to have an onset after 45 years.[7]	
• *It is important to ascertain the patient's **age at the onset of the back pain** as opposed to only recording their current age as they may have been experiencing back pain for several years.*	
TWO	**Did your back pain develop gradually?**
• Unlike inflammatory back pain, mechanical back pain, such as disc herniation, is frequently of a more sudden onset. **IBP has an insidious onset** and patients are likely to have been experiencing back pain for >3 months.[7]	
THREE	**Does your back pain improve with movement?**
• Symptoms of musculoskeletal inflammation are **often improved with movement and exercise**.[7]	
FOUR	**Do you find there is no improvement in your back pain when you rest?**
• Similar to the above, no improvement of the pain with rest is a classic feature of inflammatory back pain.	
FIVE	**Do you suffer from back pain at night which improves upon getting up?**
• Patients with inflammatory back pain often experience a **worsening of symptoms when resting at night**, and waking during the second half of the night due to pain and discomfort is a key feature of inflammatory back pain.[7]	

Inflammatory back pain requiring further investigation is usually indicated if the answer is 'yes' to **four or more** of these parameters

Sieper et al. *Ann Rheum Dis* 2009;68:784–788.

Question 9

Which of the following would your rate as the most important question in supporting you potential diagnosis of inflammatory back pain?

A. Is there a family history of inflammatory back pain?
B. Is Emily HLA-B27-positive?
C. Is there a history of other joint swelling?
D. Is there a history of psoriasis?
E. Is there a history of nervous breakdown?
F. Is there a history of heel pain?
G. Is there a history of migraine?
H. Is there a history of uveitis?

ASAS Classification Criteria for Axial Spondyloarthritis (SpA)

Enthesitis (Insertion of Achilles Tendon at Calcaneus) Right Heel

SpA features:

- inflammatory back pain
- arthritis
- enthesitis (heel)
- uveitis
- dactylitis
- psoriasis
- Crohn's/colitis
- good response to NSAIDs
- family history for SpA
- HLA-B27
- elevated CRP

ASAS

Question 10

From Emily's subjective history only, would you potentially consider the nature of her pain to be…?

A. Mechanical
B. Inflammatory
C. Somatic
D. Psychosomatic
E. Other
F. Don't know

ASAS Classification Criteria for Axial Spondyloarthritis (SpA)

In patients with ≥3 months back pain and age at onset <45 years

Sacroiliitis on imaging*

plus

≥1 SpA feature

OR

HLA-B27

plus

≥2 other SpA features

***Sacroiliitis on imaging**

- **active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA**
- **definite radiographic sacroiliitis according to the modified New York criteria**

SpA features:

- inflammatory back pain
- arthritis
- enthesitis (heel)
- uveitis
- dactylitis
- psoriasis
- Crohn's/colitis
- good response to NSAIDs
- family history for SpA
- HLA-B27
- elevated CRP

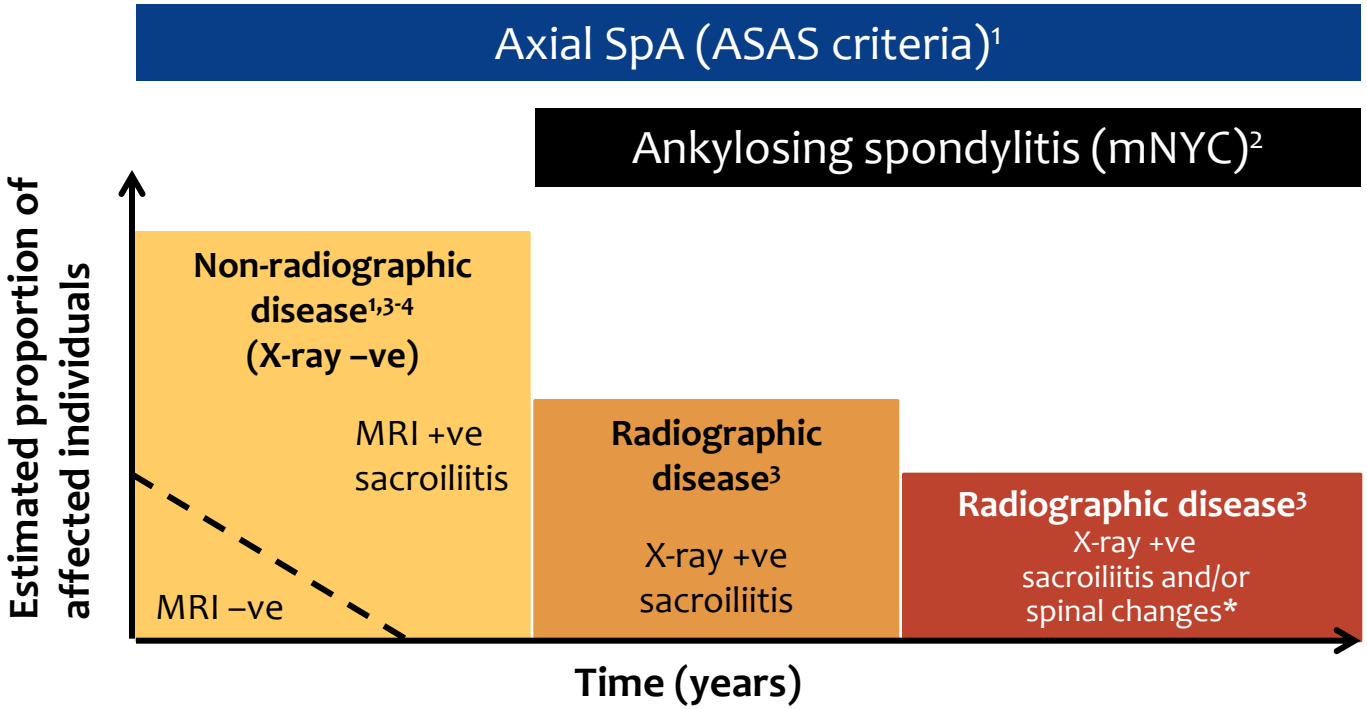
n=649 patients with back pain;

Overall
Sensitivity: 82.9%, Specificity: 84.4%
Imaging arm alone
Sensitivity: 66.2%, Specificity: 97.3%
Clinical arm alone
Sensitivity: 56.6%, Specificity: 83.3%

Rudwaleit M et al. Ann Rheum Dis 2009;68:777-783 (with permission)

Axial SpA – a spectrum of disease

Patients with chronic back pain ≥ 3 months and aged < 45 years



This figure was developed by, and is the intellectual property of, the UK Axial SpA Special Interest Group: Dr Nick Barkham, Dr Alex Bennett, Dr Karl Gaffney, Dr Amanda Isdale, Dr Andrew Keat, Dr Helena Marzo-Ortega, and Dr Raj Sengupta.

*Radiographic evidence of spinal changes including syndesmophytes, fusion or posterior element involvement
ASAS, Assessment of SpondyloArthritis International Society; mNYC, modified New York criteria

1. Rudwaleit M, *et al. Ann Rheum Dis* 2009;68:777–83. 2. van der Linden S, *et al. Arthritis Rheum* 1984;27:361–8. 3. Rudwaleit M, *et al. Arthritis Rheum* 2005;52:1000–8. 4. Marzo-Ortega H, *et al. Ann Rheum Dis* 2009;68:1721–7.

Conclusions – Emily

- Insidious onset low back pain
- 3rd decade of life
- Night pain
- Alternating buttock pain
- Pain increased with rest

Inflammatory back pain

Referral to Rheumatologist

Summary

- ✓ **Differentiation of back pain has proved to be a challenge** as symptoms are often similar.
- ✓ **Inflammatory Back Pain symptoms can be subtle, particularly in the early stages**
- ✓ **Earlier an accurate diagnosis, means the better the outcome for the patient.**
- ✓ The main value of history taking, physical examination and clinical reasoning is to **determine which patients should be referred for further evaluation** and this may facilitate prognosis.
- ✓ **Rheumatology services could provide optimum care for patients with Inflammatory Back Pain** via an expert multi-disciplinary team
- ✓ Physical management and education are common denominators for **all** chronic back problems
- ✓ Referral to Rheumatology should be considered in all patients under 40 years who present with **Inflammatory Back Pain**

THANKYOU
GRACIAS
Merci
Grazie
TAKK
DANKE
HVALA
TACK
KIITOS
DANKU
ThankYou
Kiitos
Danku
Danke
Takk
Tack
Gracias