Ankylosing Spondylitis and Osteoporosis

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Key messages

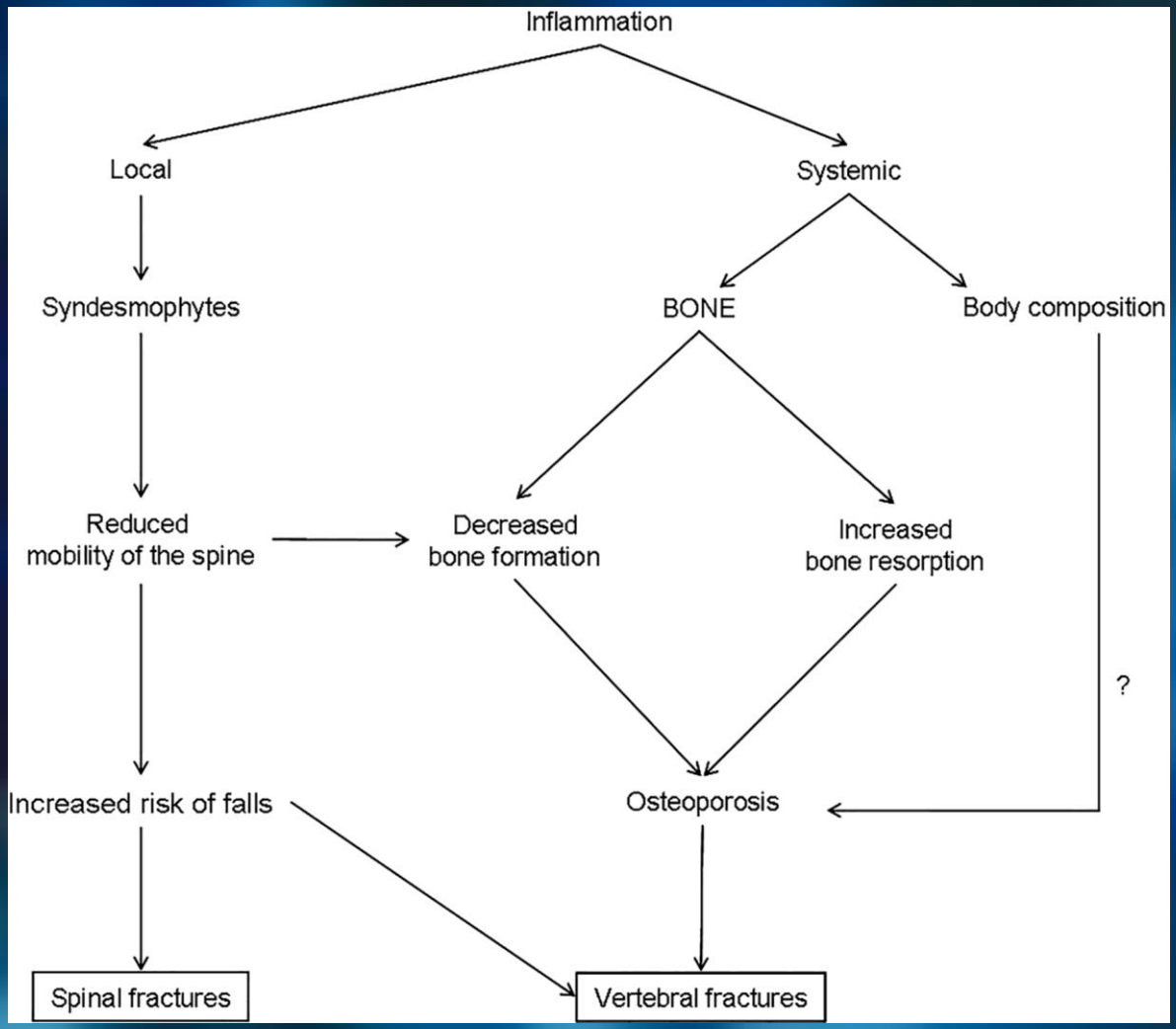
- Osteoporosis (or low bone mineral density) is common in ankylosing spondylitis, related to both systemic inflammation and decreased mobility.
- Patients with ankylosing spondylitis have an increased risk of vertebral fractures.
- Effective treatments against inflammation (TNF blockers) have a positive affect on bone mineral density.
- Intervertebral disc fractures in the ankylosed spine are associated with severe neurological complications

AS versus BMD

- The definition of ‘low BMD’ varies among studies. In theory, T scores are used only for postmenopausal women, and Z scores should be used in young males; an abnormal BMD could then be defined as $Z \leq -2$.
- There is a debate about low BMD as a risk factor for vertebral fracture in AS. Such a relationship has not been found in patients with early disease.2

- Osteoporosis can occur in AS because of reduced physical activity, and decreased functional capacity related to pain, stiffness and ankylosis.
- Two prospective studies have shown that spine and hip BMD decrease predominantly in patients with active disease
- Interestingly, bone inflammatory lesions on MRI were one of the determinants of low spine BMD, and the single determinant of low hip BMD, suggesting the systemic effect of inflammation.3

Bone fragility in ankylosing spondylitis.



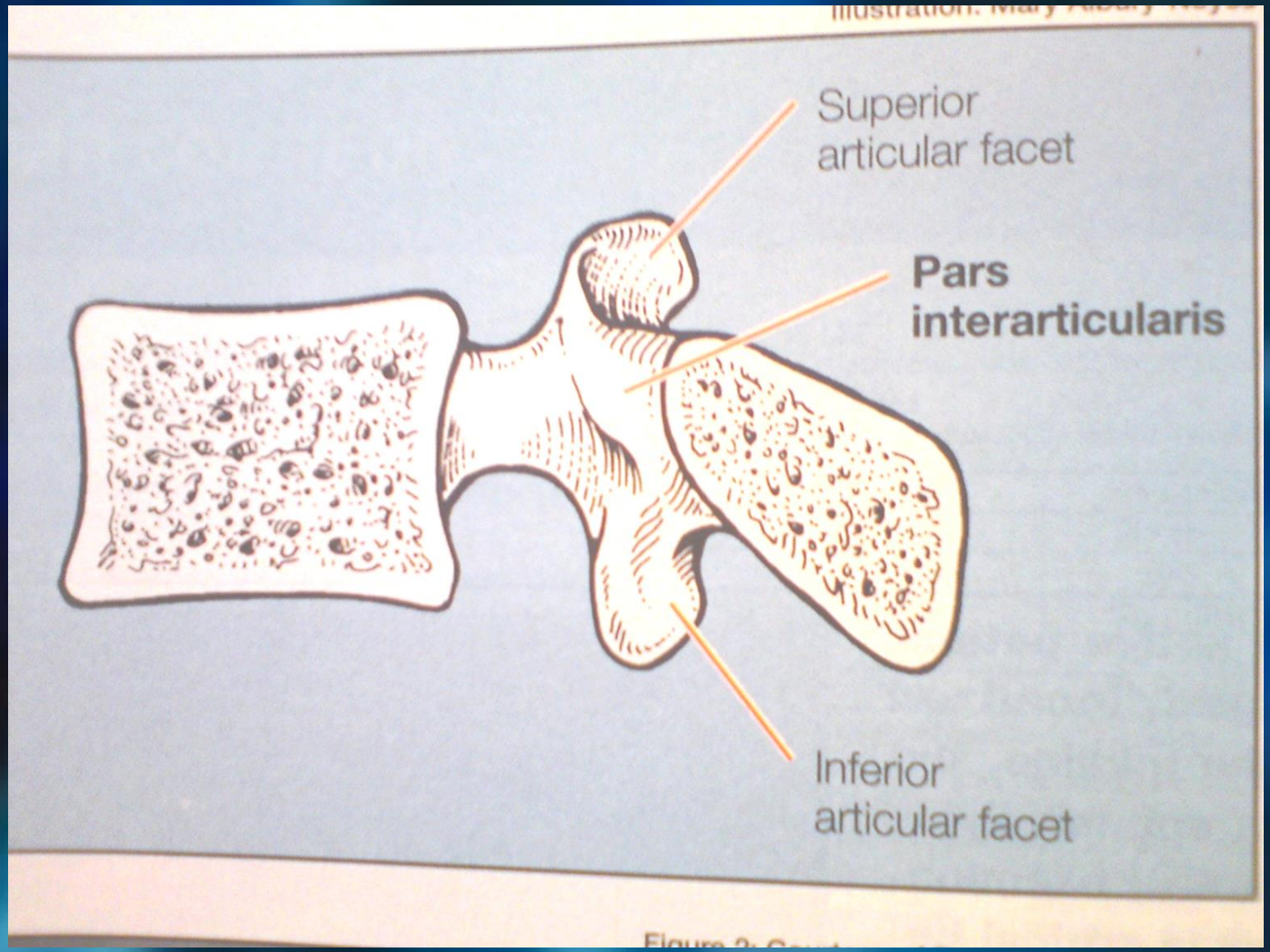
Karine Briot, and Christian Roux RMD Open 2015;1:e000052

RMD Open

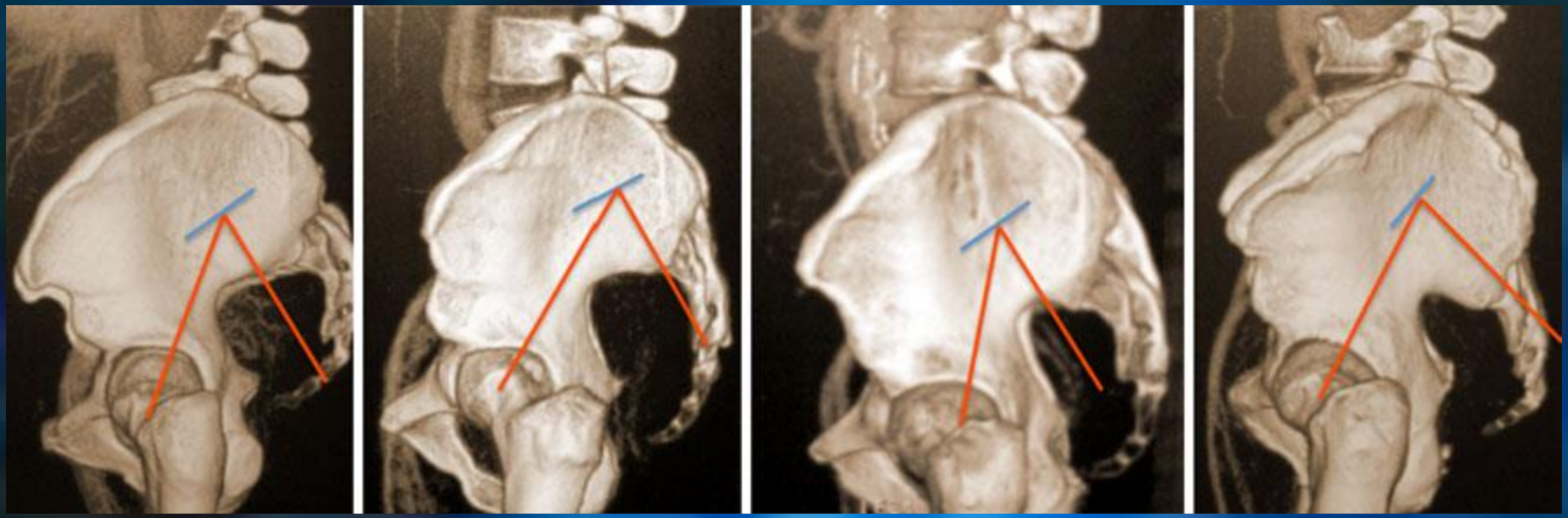
- The risk of any clinical fracture was decreased in patients with AS taking non-steroidal anti-inflammatory drugs (NSAIDs)
- Prospective open studies in patients with AS receiving TNF blockers show a positive effect on BMD.
- Changes in bone remodelling markers in patients treated with TNFα blockers are those expected with a treatment having an antiresorptive activity

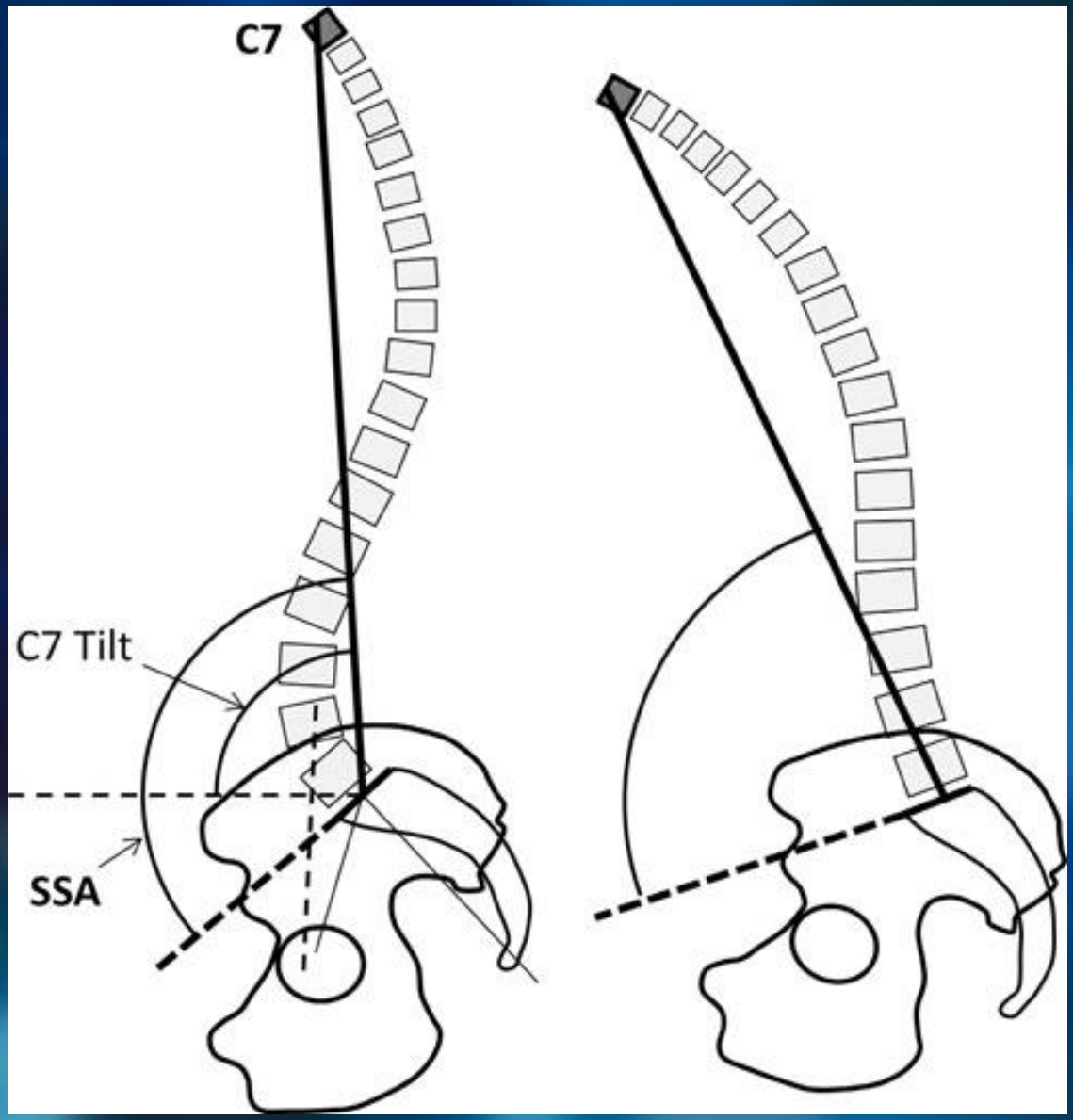
CONCLUSION

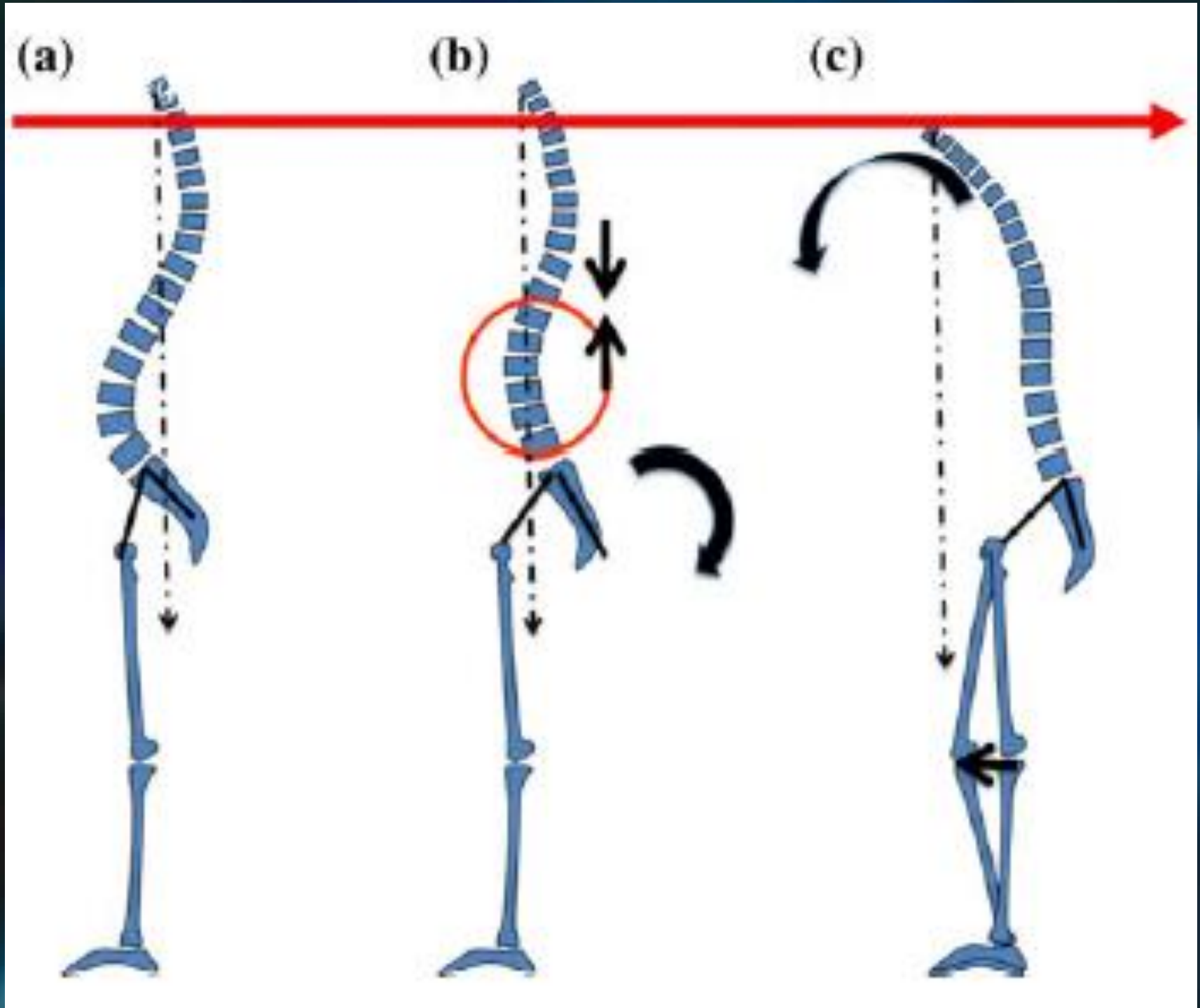
- Ankylosing spondylitis raises a paradox: patients have both osteoporosis and an excess of bone formation.
- Local changes and systemic bone loss are underlined by different mechanisms.
- AS is an appropriate model for studies of bone effect of inflammation.

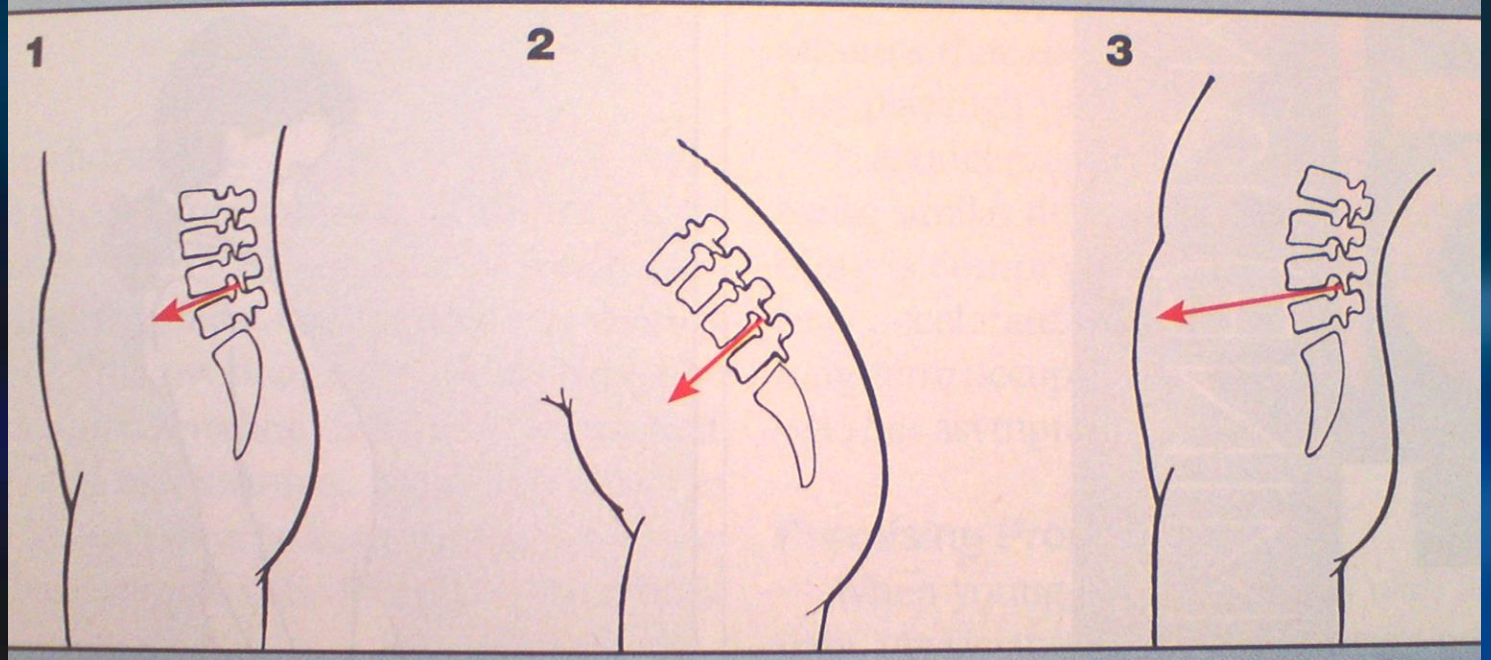

Superior
articular facet
Pars
interarticularis
Inferior
articular facet

Anatomical Value



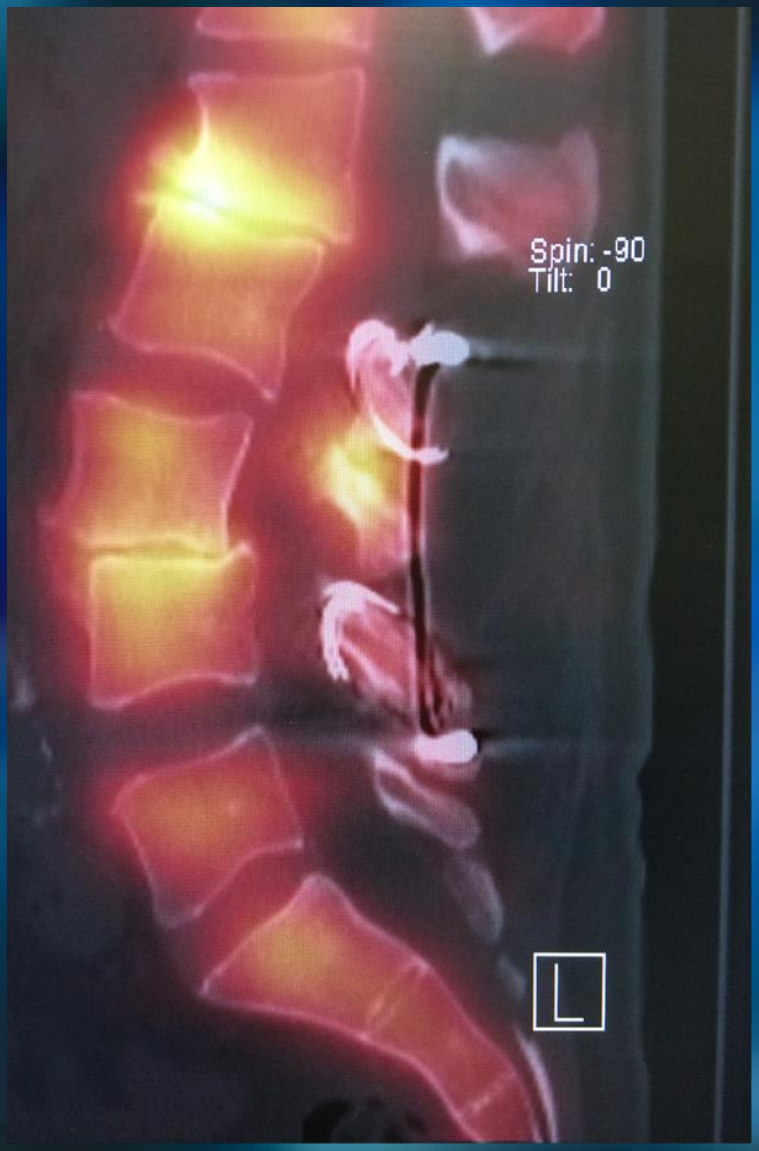

C7
C7 Tilt
SSA


(a)
(b)
(c)



Shear forces (arrows) on the facet joints are translated to each lumbar pars ularis. Though small with normal spinal curvature (1), shear forces increase with xion (2) and especially with hyperextension (3).

SPEC-CT

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