Backgrounder: Ankylosing Spondylitis

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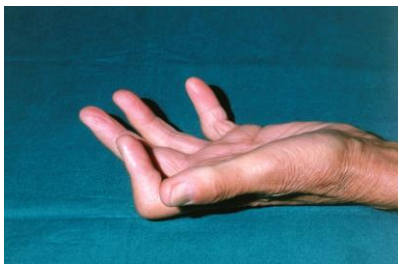
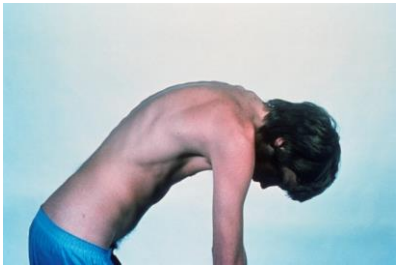
What is ankylosing spondylitis?

Ankylosing spondylitis (AS) is painful, progressively debilitating inflammatory disease. It is caused by inflammation of the spine leading to irreversible damage that significantly reduces patients' mobility and quality of life[2].

AS occurs in approximately 1% of the general population and typically affects young men and women aged 25 or older[3,4]. Certain genetic factors increase a person's risk of developing AS by more than 50%[5].



Flexion contractures of the hand in a patient with ankylosing spondylitis



A young man with severe ankylosing spondylitis, showing outward curvature of the spine due to fusion of the vertebrae

What is the immune system's role in AS?

The immune system produces certain proteins called cytokines, which serve as "messengers" that coordinate communication between immune cells in response to an infection[6]. One of these cytokines, interleukin-17A (IL-17A), has been identified as playing a key role in a number of immune-mediated diseases such as AS[6].

Higher concentrations of IL-17A have been found in areas surrounding the bones and joints in people suffering from AS, particularly in the fluid and lining of the joints[7-9].

- IL-17A acts as signal to infection-fighting cells, triggering an inflammatory response that results in bone erosion and new bone formation to replace lost elastic tissue in areas surrounding the bones and joints[7-9].
- Infection-fighting cells continue to release IL-17A, leading to further inflammation and ultimately new bone reformation that causes bones to grow together into a rigid structure[7-9].

What are the physical and psychological effects of AS?

Up to 70% of patients with severe AS can develop spinal fusion (bones grow together), which significantly reduces mobility and quality of life[2,10,11].. In particular, professional performance is significantly affected, with 78% more likely to shorten their working hours and therefore risk losing their jobs[11]. Because people can no longer effectively undertake day-to-day activities, some may also develop anxiety and depression[12].

What are the unmet needs in AS?

Patients with AS have very few therapeutic options available to them[13]. In patients who do not respond to non-steroidal anti-inflammatory drugs (NSAIDS), anti-TNF (tumor-necrosis-factor) medicines are the only currently available biologic treatment alternative, but are not effective for all patients[13]. Up to 40% of people receiving anti-TNF therapy, the current standard of treatment for more severe disease, fail to achieve sufficient clinical improvement[13]. There remains significant unmet need in AS for safer, faster-acting and longer-lasting treatments than those currently available[13].

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