

Mechanism regulating gene expression linked to bone and joint damage in AS

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The results of a study presented today at the European League Against Rheumatism Annual Congress (EULAR 2015) Press Conference revealed that DNA methylation - a mechanism that regulates gene expression - could influence the progression of structural damage to the joints and spine in ankylosing spondylitis (AS). Study findings showed significant associations between a low methylation score and more radiographic progression (X-ray) of the disease, and implicated smoking in worsening of disease outcome.

DNA methylation is one of several <u>epigenetic mechanisms</u>; epigenetics is the study of factors aside from the DNA sequence that control whether genes are read or not and thus influence expression and function of genes. Although epigenetic mechanisms are essential for controlling normal development, abnormal epigenetic change may be seen when they are implicated in disease.

"This is the first study to demonstrate how epigenetic factors can influence radiographic progression in AS," said study investigator Dr. Proton Rahman, Faculty of Medicine, Memorial University of Newfoundland, Canada. "We investigated epigenetic variants recently linked to ankylosis, and uncovered a significant association between smoking, methylation status and radiographic progression. We hypothesise that environmental triggers - such as smoking - could lead to epigenetic changes that accelerate the damage caused by the disease, and that investigating the mechanisms that control these changes could one day lead to novel therapeutic targets for AS."



AS is a painful and progressive form of arthritis caused by chronic inflammation of the joints in the spine. Prevalence of AS varies globally, and is estimated at 23.8 per 10,000 in Europe and 31.9 per 10,000 in North America.

Damage caused by AS impairs spinal mobility, which reduces a patients' ability to perform daily activities and negatively impacts their quality of life. Radiography is the classical tool for identifying these structural changes.

The study consisted of 75 AS patients that had radiographs on average every three years, with 35 of these patients exhibiting radiographic progression. The study showed a significant association between smoking, methylation status and radiographic progression; a low total methylation score was significantly associated with more radiographic progression, and worse radiographic progression was observed in smokers than non-smokers (not statistically significant).

Provided by European League Against Rheumatism

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