

## Scientific Research Process

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Case Control Study

**Title:** Interleukin - 6 and ratio of plasma interleukin - 6 / interleukin - 10 as risk factors of symptomatic lumbar osteoarthritis

Suyasa IK *et al.* Risk factors of symptomatic lumbar osteoarthritis

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1 What did this study explore?

This study explores about the role of COMP, IL-6 and IL-10 as risk factors for symptomatic lumbar osteoarthritis in postmenopausal women with estrogen deficiency. By determining the role of COMP, IL-6 and IL-10 as risk factors for the occurrence of symptomatic lumbar osteoarthritis in postmenopausal women estrogen deficiency, it is expected that early prediction, prevention and management can be recognized.

2 How did the authors perform all experiments?

The study was divided into two phases. The first phase was cross sectional study aimed to find the prevalence of lumbar osteoarthritis. This procedure started with identification of target population which is post menopause women. This estrogen level of this target population are examined to get the source population which is post menopause women with estrogen deficiency. Consecutive sampling is performed to obtain sample from source population according to the inclusion and exclusion criteria. History taking, physical examination and lumbosacral x-ray on the sample were performed to determine the cases and controls for the next phase.

The second phase was case control study that began with identification for group of cases, which was defined as postmenopausal women with estrogen deficiency and symptomatic lumbar OA. The pair of the cases was taken from controls group, which was defined as postmenopausal women with estrogen deficiency and asymptomatic lumbar OA. The case and control are matched based on age and BMI factors. After matching, the serum level COMP, plasma level IL-6, IL-10 and ratio level IL-6/IL-10 were measured. Then the research data are analyzed by statistic to compare the exposure probability to risk factors. The case group later compared with the control group to obtain odd ratio. Odd ratio described as the risk effects, which result from exposure to the risk factors.

3 How did the authors process all experimental data?

The author process all study data by sorting, tabulating and analyzed using STATA SE 12.1 Statistic software. The data are analyzed with several steps started with data normality, analysis of the characteristics of cases and controls descriptively, and analysis of risk factors for symptomatic lumbar osteoarthritis performed by bivariate analysis (McNemar's Chi Square) to the independent variable such as COMP serum, IL-6 plasma, IL-10 plasma and the ratio of IL-6 / IL-10 plasma. The risk estimation was calculated with Odd Ratio.

4 How did the authors deal with the pre-study hypothesis?

The author did not perform a pre-study in relation with this study topic.

5 What are the novel findings of this study?

The research novelty of this research was the finding of high ratio levels of IL-6 / IL-10 plasma as the strongest risk factor of symptomatic lumbar osteoarthritis in postmenopausal women with estrogen deficiency. This novelty strengthens the theory of inflammation in symptomatic lumbar osteoarthritis.