中文題目：探討僵直性脊椎炎患者相關因子對判讀發炎指標中紅血球沉降率之研究

英文題目：Factors should be considered before interpreting Erythrocyte Sedimentation Rate as an inflammatory marker in Ankylosing Spondylitis daily care

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Background*:* Ankylosing spondylitis (AS), including radiographic and non-radiographic AS, is an autoimmune disease. AS will cause inflammation of the spine, enthesis and peripheral joints, which will result in long-term complications if the disease activity is not well-controlled. Thus, disease activity measurement and treatment adjustment accordingly is vital in the clinical care of AS patients. Currently, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) and ASDAS-CRP were tools used to evaluate disease activity of AS. Among these markers, ESR is believed to reflect chronic inflammation of AS, and is used as an application criteria for advanced medication. However, previous studies reported that some factors may interfere the interpreting of ESR, such as age, sex, hemoglobin, renal function and body mass index (BMI). However, when interpreting ESR, these factors were not taken into consideration, such as gender difference. This study aimed to investigate factors influenced the interpretation of ESR as an inflammatory marker in AS patients.

Method: A retrospective observational study in AS patients was conducted in Shuang-Ho hospital during 2018-2020. Demographic data of the AS patients, along with clinical data when visiting outpatient department were collected. In addition to ESR, ASDAS-CRP was analyzed as the major marker of disease activity. A multivariate linear regression was performed to analyze factors correlated with ESR level including sex, age, hemoglobin, renal function, and BMI in addition to disease activity.

Results: There were 267 AS patients (68% were male; mean age of 42 years) enrolled, as well as their clinical data of the 872 visits. In comparison to female patients, male patients had similar disease activity measured by ASDAS-CRP or CRP, but significantly lower ESR ($P < 0.05$). After adjusting disease activity (ASDAS-CRP), factors significantly influence ESR levels were male, and hemoglobin level. These factors were analyzed in the multivariate linear regression model, which showed, other than disease activity (ASDAS-CRP), hemoglobin was the main factor significantly influencing ESR level, while sex, age, renal function, and BMI were insignificant.

Conclusion: Other than disease activity, several factors significantly influence ESR level. The same ESR reflected different severity of inflammation between sex, and this difference mainly came from hemoglobin level. As ESR is widely used in routine practice, we need further investigation to have a hemoglobin-adjusted method for precise interpretation of ESR as a disease activity marker in AS daily care.