Using Corrected Erythrocyte Sedimentation Rate (Cesr) To Aid in the Diagnosis of Infection in Pediatric Cancer Patients with Febrile Neutropenia

Pawinee Kaewsuwan[1], Surapon Wiangnon[1], Yossombat Jangtrakul[2], Pope Kosalaraksa[1]
[1]*Department of Pediatric, Faculty of Medicine, Khon Kaen University*
[2]*Microbiology Unit, Faculty of Medicine, Khon Kaen University*

Background and Objective: Febrile neutropenia is an important infectious condition commonly found in patients with an underlying malignancy. However, infectious symptoms and signs in these patients are not specific and the empirical antibiotics are needed before document of infection. The laboratory investigations such as procalcitonin, C-reactive protein, and erythrocyte sedimentation rate (ESR) are an inflammatory marker that has been used as an indicator of infection. However, the ESR has less value possibly the effect of anemia which makes its value higher than usual. In this study, we aim to evaluate corrected ESR as a support marker for infection in febrile neutropenic patients.

Methods: Febrile neutropenic children (1-15 years old) with an underlying malignancy and received chemotherapy within one month before onset of fever were enrolled after inform consent. All patients were evaluated as to the existence of a site of infection using clinical and microbiological data. Blood sample was collected in the 1st, 3rd and 7th day during admission in order to determine ESR, corrected ESR, C-reactive protein and procalcitonin in the 1st day, ESR and corrected ESR in the 3rd and 7th day.

Results: Twenty-three patients were enrolled with 27 febrile neutropenia episodes. 13 (48%) episodes were documented infection (clinically and microbiologically infection). The mean of ESR in documented infection group and non-documented infection group were 66±38 and 88±30 mm/hr, respectively. The mean corrected of ESR was not statistically different between documented infection group and non-documented infection group (47±6 versus 59±27 mm/hr, p = 0.25). However, the mean corrected ESR was significant lower in the group with bacteremia (14±6 versus 59±27 mm/hr, p = 0.01).

Conclusion: The corrected ESR in febrile neutropenic children was significant lower than the uncorrected ESR. The corrected ESR was high in almost all febrile neutropenic children and cannot be used as a marker to help diagnosis of infection in febrile neutropenic patients. Due to the small sample size, the analysis should be made after the completion of the enrolment. Moreover, the ESR value should be done in these patients during to determine the baseline value during non-febrile non-neutropenic episode.