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Paper Poster Session

Viral pathogenesis and treatment targets

Usefulness of differential cell count and CRP level in blood as predictors for Middle East respiratory syndrome coronavirus infection in acute febrile patients during nosocomial outbreak

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Background: The Republic of Korea has experienced the largest outbreak of Middle East respiratory syndrome coronavirus (MERS-CoV) infection outside the Arabian Peninsula in 2015. A case-control study was performed to identify possible clinical predictors which can differentiate MERS-CoV-positive patients from MERS-CoV-negative patients with acute febrile illness during the nosocomial outbreak.

Material/methods: The cases were defined as hospitalized patients with laboratory-confirmed MERS-CoV infection without serious medical conditions. The controls were selected from the pool of patients, mostly healthcare workers, who were admitted to the hospital with acute febrile illness during the same period of the outbreak. Initial clinical presentation and laboratory findings were compared between both groups.

Results: During the study period, 30 cases and 43 controls were included in the study. There were no significant differences in the underlying diseases except cardiovascular diseases (13.3% versus 0%, $P=0.025$) and hypertension (16.7% versus 0%, $P=0.009$). Patient with MERS-CoV were more likely to have monocytosis ($> 8\%$ of total WBC) with normal WBC count (66.7% versus 23.3%, $P<0.001$) and elevated AST over 40 U/L (26.7% versus 7%, $P<0.021$). In contrast, leukocytosis (0% versus 48.8%, $P<0.001$) with relatively lymphopenia (30% versus 100%, $P<0.001$) were more frequently seen patient with acute febrile illness other than MERS. The median CRP level were significantly lower in the case group than the controls (0.76 versus 1.82 mg/dl, $P<0.001$).

Conclusions: Our study suggests that initial laboratory findings of patients with acute febrile illness could be potential predictors for MERS-CoV infection during the nosocomial outbreak. Monocytosis with normal WBC count and low CRP level may be useful markers for the prediction of MERS and triage at the initial presentation of acute febrile patients.