

KSN 2017 Abstract

KSN-17-P094

Circulating cell-free genomic DNA, mitochondrial DNA and pentraxin-3 in the patients on hemodialysis and medical staffs during isolation by Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Korea

Yang gyun KIM¹, Haena MOON¹, Da-wun JEONG¹, *Sang-ho LEE¹, Se-yun KIM¹, Yu-ho LEE¹, Kipyoo KIM¹, Ju young MOON¹, Young-ki LEE²

¹Nephrology, Kyung Hee University College of Medicine, Korea, South, ²Internal Medicine, Hallym University College of Medicine, Korea, South

Objectives : The plasma level of circulating cell free genomic DNA (ccf-gDNA), mitochondrial DNA (ccf-mtDNA) and pentraxin-3 (PTX-3) is known to be elevated under inflammatory or stress condition. At the outbreak of the Middle East Respiratory syndrome coronavirus (MERS-CoV) in 2015, hemodialysis (HD) patients and medical staffs in our center were exposed to one patient infected by MERS-CoV and have been isolated during 2 weeks. This study was performed to investigate clinical meaning of ccf-gDNA, ccf-mtDNA and PTX-3 in HD patients and medical staffs during isolating period.

Methods : The plasma of 85 HD patients at predialysis and 12 medical staffs at morning time was collected at 2 week, 4 week, and 16 week after isolation. Real-time PCR for ccf-gDNA and ccf-mtDNA and ELISA for PTX-3 were done. General characteristics for HD patients were also analyzed.

Results : The log level of ccf-gDNA was significantly decreased from 2 to 4 week, and from 4 to 16 week in HD patients. However medical staffs showed abrupt decline of ccf-gDNA from 2 to 4 week then, there was no change between 4 and 16 week. The level of ccf-gDNA at 4 week was significantly higher in HD patients than that of medical staffs. The level of ccf-mtDNA was not changed between 2 and 4 week, then it was significantly decreased from 4 to 16 week in HD patients. Although the value of ccf-mtDNA was similar in HD patients and medical staff, ccf-mtDNA of medical staffs was significantly declined from 2 to 4 week, and from 4 to 16 week. During isolation period, PTX-3 was elevated only in HD patients. The value of PTX-3 was highest at 2 week and significantly decreased at 4 week, then became similar with that of medical staffs at 16 week. The patients receiving adequate care of anemia ($Hb \geq 10g/dL$) and dialysis ($Kt/V \geq 1.2$) were 59.1% and 95.3% at 2 week after isolation, then it was elevated to 87.8% and 100% at 16 week.

Conclusions : Elevated ccf-gDNA and ccf-mtDNA in HD patients and medical staffs reflects extremely physical and emotional stress during isolation.

KSN 2017 Abstract

However, the level of cfDNA and mtDNA was recovered slowly and PTX-3 was only increased in HD patients. It was suggested that the inflammatory response under stress was intensified in HD patients and poor management during isolating period could influence these findings.

Keywords : MERS-CoV, circulating cell-free genomic DNA, circulating cell-free mitochondria DNA, pentraxin-3