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PREDICTIVE VALUES OF MONOCYTE-DERIVED CYTOKINE RESPONSE TO PACLITAXEL FOR THE OCCURRENCE OF IN-STENT RESTENOSIS AFTER CORONARY PACLITAXEL-ELUTING STENT IMPLANTATION

Kyung-Soo Kim[1, 2], Yi-Sun Song[1], Yonggu Lee[3], Hyun-Woo Joo[1], In-Hwa Park[1], Guang-Yin Shen[2], Jin-Hee Seong, Ki-Sul Chang[2], Jeong Hun Shin3 and Hyuck Kim[2]

[1]Hanyang University, South Korea
[2]Hanyang University College of Medicine, South Korea
[3]Hanyang University Guri Hospital, South Korea

Background: In-stent restenosis (ISR) remains as a major limitation of percutaneous coronary intervention (PCI) even today when drug eluting stent (DES) implantation has become a daily practice. Although some clinical predictors of ISR after DES implantation have been reported, individual's susceptibility to the eluted drugs has not been investigated as a predictors of ISR. We studied predictive values of monocyte-derived cytokine responses to paclitaxel for ISR after DES implantation.

Methods: Peripheral blood was sampled from 110 patients (ISR/non-ISR group, 70/40 patients) who had undergone paclitaxel-eluting stent (PES). Coronary angiography was repeated within 2 years after PES implantation to identify the existence of ISR. Monocytes were isolated from the peripheral blood samples, stimulated using lipopolysaccharide, and then treated with paclitaxel. Monocyte-derived cytokine secretion was measured using the Luminex array. The fold increases between pre- and post-paclitaxel exposure cytokine levels were used as the response to paclitaxel.

Results: Interleukin-10 (1.3 fold vs. 1.0 fold, p =0.016) and interleukin-12 (2.3 fold vs. 1.7 fold, p =0.002) secretions were higher in the non-ISR group than in the ISR group. In the receiver operating characteristics curves analysis for ISR, the area under the curves were 0.69 and 0.67 for interleukin-10 and interleukin-12, respectively. When the patients were dichotomized using the optimal cut-off point for each cytokine fold increase, ISR less frequently occurred in groups with high fold increases of cytokines including, interleukin-10 (1.1 fold; 50.0% vs. 19.0%, p=0.012), interleukin-12 (2.1 fold; 49.1% vs. 24.6%, p=0.014), interleukin-6 (1.8 fold; 51.4% vs. 29.3%, p=0.009) and interferon-γ (1.3 fold; 43.7% vs. 23.1%, p=0.038).

Conclusion: There was a modest predictive value of monocyte derived cytokine response to paclitaxel for ISR after PES implantation. Larger-scale prospective studies are required to confirm the predictive value for paclitaxel and possibly for other drugs eluted on various stents.

kskim@hanyang.ac.kr