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Proteomic biomarkers in amniotic fluid for predicting the outcome of emergency cerclage in women with cervical insufficiencyKyo Hoon Park¹, Joon Ho Lee³, Sungyoon Moon², Yong Yook Lee², Jin Sun Jung² and Jeong Woo Park²¹Inje University, South Korea²Seoul National University, South Korea³Yonsei University, South Korea

The etiology of cervical insufficiency is multifactorial and the success of emergency cerclage is unpredictable. We aimed to identify the differentially expressed protein profiles and proteomic biomarkers in amniotic fluid (AF) that can predict the outcome of emergency cerclage in women with cervical insufficiency. This nested case-control study was conducted using AF samples collected from pregnant women who underwent emergency cerclage following a diagnosis of cervical insufficiency. Women were divided into the case group (N=8) and the control group (N=8) based on the occurrence of spontaneous preterm delivery at <34 weeks of gestation after cerclage placement. Samples were analyzed by liquid chromatography-tandem mass spectrometry for protein profiling. Enzyme-linked immunosorbent assay (ELISA) results were used to validate the differentially expressed proteins. Mining of the proteomics data demonstrated a total 246 differentially expressed proteins in the AF samples according to the outcome of emergency cerclage in women with cervical insufficiency. ELISA yielded results consistent with proteomic analysis for 4 proteins, such as myeloperoxidase, lactoferrin, glucose-6-phosphate isomerase and lymphocyte cytosolic protein 1. The top three pathways associated with preterm birth after cerclage were acute phase response signaling, infectious and inflammatory response and cell death and survival pathways. Proteomic analyses in this study identify the differentially expressed proteins in AF, which can be used to predict the clinical outcome of emergency cerclage in women with cervical insufficiency. These data can also give an insight into the molecular mechanisms by which the pregnancy maintains successfully after emergency cerclage in women with cervical insufficiency.

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