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Abnormal C5 production and activation contributes to the mortality of COVID-19 patients

Elucidating the pathogenesis of COVID-19 is vital for treating the disease. Recent clinical studies have suggested that the complement system may play an important role in the course of infection. We investigated the correlation between complement C5, a critical factor in the complement common pathway, and the mortality of COVID-19. Thirty-seven COVID-19 patients were consented for this study. Serial blood samples were collected at different time points from 27 patients who recovered during hospitalization, and 10 patients who did not survive during hospitalization. Circulating native C5 was analyzed by Western Blot to detect α-chain and β-chain of intact C5. The activated C5a levels were detected by an ELISA kit. The levels of C5 β-chain and C5a were significantly higher in the non-survivors than in the survivors. Multivariate regression analyses showed that abnormal levels of C5 β-chain and C5a could independently predict the mortality. Therefore, our results suggest that in COVID-19 patients, the abnormal C5 production and activation may contribute to the systemic inflammation thus affect survival.