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Effect of Meteorological Factors on the Incidence of Peritoneal Dialysis-Related Peritonitis

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Objectives: Peritoneal dialysis-associated peritonitis is an important risk factor for the clinical outcome of peritoneal dialysis patients. In this study, the effect of meteorological factors on the occurrence of peritonitis was investigated.

Methods: A retrospective analysis was performed on patients who underwent maintenance peritoneal dialysis at Seoul St. Mary's Hospital from January 2012 to December 2020. The diagnosis of peritonitis was established according to the International Society of Peritoneal Dialysis guidelines. The incidence of peritonitis was expressed as episodes per patient year and compared using Poisson regression analysis.

Results: The total patient year followed during the 108-month study period was 1909.75 person years, and a total of 481 episodes of peritonitis occurred. The incidence of peritonitis was 0.25 episodes/patient-year.

The incidence of peritonitis in the period with an average temperature below 14°C was 0.24 episodes/patient-year, and the rate of peritonitis during the period above 14°C was 0.26 episodes/patient-year (p value 0.028). No significant difference was observed in the incidence of peritonitis according to the average daily temperature difference, average humidity, and average amount of rainfall. Also, there was no significant difference in the incidence of peritonitis according to the national average fine dust (particulate matter over 10µm) concentration.

Conclusions: Various factors are involved in the development of peritoneal dialysis-associated peritonitis. The results of this study suggest that the average temperature among meteorological factors has a significant effect on the occurrence of peritoneal dialysis-associated peritonitis. However, average humidity, amount of rain falls, and fine dust concentration did not affect the incidence of peritonitis.

Figure 1. CAPD peritonitis incidence and mean temperature

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Incidence of peritonitis and mean temperature

