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Xerosis Elevates the Risk of Catheter-Related Infections in Peritoneal Dialysis Patients

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Objectives : Catheter-related infections such as exit-site infection (ESI) and tunnel infection (TI) are major complications in peritoneal dialysis (PD) patients, affecting their prognosis. This study investigates the association between skin conditions and catheter-related infections.
Methods : Data from the Korean arm of the Peritoneal Dialysis Outcomes and Practice Patterns Study (PDOPPS) and skin microbiome data from dialysis patients at Soonchunhyang University Cheonan Hospital were analyzed. PDOPPS is a continuous multicenter prospective study performed globally since 2024. This study enrolled 626 PD patients in PDOPPS Korea from 2019 to 2021 (no xerosis: 119; low-grade xerosis: 332; high-grade xerosis: 175) and 76 dialysis patients in Soonchunhyang University Cheonan Hospital. The relationship between catheter-related infection and self-reported xerosis and pruritus severity was assessed by Cox regression. Risk factors for xerosis and pruritus were evaluated by logistic regression. Furthermore, we discovered the relationship between the severity of pruritus and the relative abundance of Staphylococcus aureus on the skin.
Results : The risk of catheter-related infections in PD patients increased with xerosis (HR = 2.71, 95% CI 1.19-6.18) and pruritus (HR = 2.37, 95% CI 1.18-4.78), particularly increasing the risk of S. aureus-associated catheter-related infections (xerosis: HR = 5.77, 95% CI 2.03-16.41; pruritus: HR = 4.19, 95% CI 1.57-11.14). The relative abundance of S. aureus was notably higher in patients with severe pruritus, providing a plausible reason for the previous findings. Moreover, patients were more likely to exhibit severe xerosis if they owned pets, had higher serum creatinine levels, and elevated Ca-P product levels.
Conclusions : Xerosis and pruritus significantly increase the risk of catheter-related infections, especially those caused by S. aureus, which is known for its challenging treatment. Instead of relying solely on prophylactic antibiotics for infection prevention, this study highlights the need for new preventive strategies in PD patients, focusing specifically on effective skin management.

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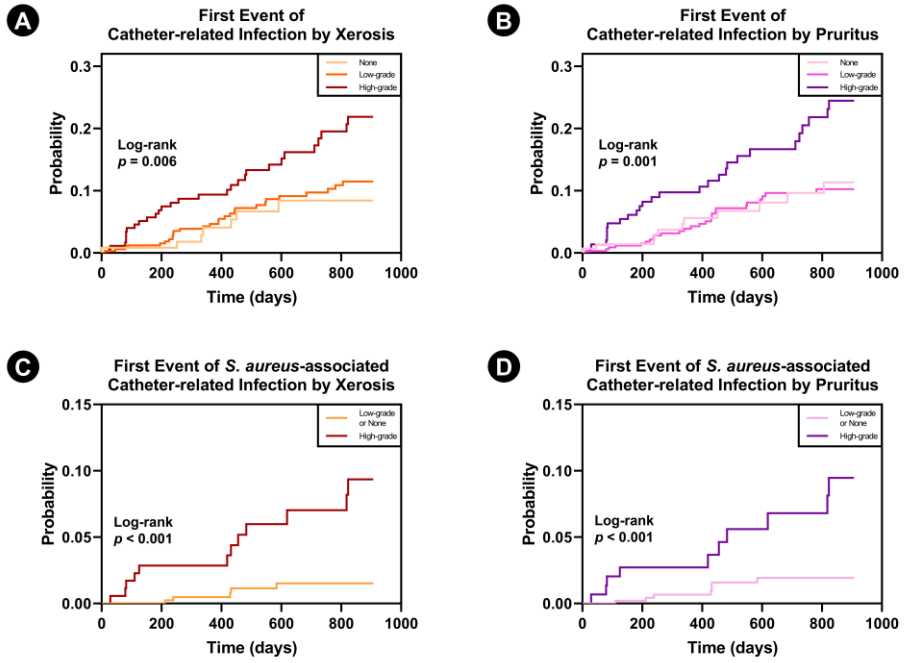

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Table. Multivariate logistic regression analysis for the risk factors for high-grade xerosis and pruritus

	Variables	OR (95% CI)	*P* value
Xerosis	Male sex	0.725 (0.496-1.062)	0.1
	Have any pets	1.629 (1.003-2.647)	0.05
	Serum creatinine	1.063 (1.004-1.127)	0.04
	Ca – P product	1.019 (1.002-1.036)	0.03
Pruritus	Diabetes	1.544 (1.032-2.312)	0.04
	Serum creatinine	1.059 (0.997-1.125)	0.06
	Ca – P product	1.026 (1.009-1.044)	0.003

OR, odds ratio; 95% CI, 95% confidence interval; PD, peritoneal dialysis; Ca – P, calcium-phosphorus. The risk factors for xerosis and pruritus were evaluated with multivariate logistic regression analysis. The adjusting variables used in each multivariate model included age, gender, diabetes, body mass index (BMI), duration of PD, have any pets, serum creatinine, parathyroid hormone, and Ca – P product. Self-reported xerosis severity (five-point scale) was classified into two groups: low-grade or no xerosis (1-3), and high-grade xerosis (4-5).