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Letter to the Editor

The usual suspect or an unusual culprit? A case of catheter hypersensitivity in peritoneal dialysis

¿El sospechoso habitual o un culpable inusual? Un caso de hipersensibilidad al catéter en diálisis peritoneal

Dear Editor,

Exit-site infections (ESIs) are a frequent complication in peritoneal dialysis (PD) and a major cause of technique failure. However, not all cases of exit-site inflammation are infectious in nature. We report a rare but clinically significant differential diagnosis: allergic contact dermatitis to the catheter material.

A 45-year-old man with stage 5 chronic kidney disease secondary to medullary cystic kidney disease initiated continuous ambulatory peritoneal dialysis (CAPD) in April 2024. His medical history included allergic rhinitis and atopic dermatitis. At the first follow-up visit, three weeks after PD initiation, erythema and serous discharge were noted at the exit site. The patient was afebrile, denied trauma to the ES, abdominal pain, cloudy effluent and was compliant with exit site care instructions. Culture of the discharge was negative. Local care was temporarily changed to include octenidine and Cutimed® dressing, with only partial improvement.

Three weeks later, purulent discharge appeared, along with erythema and a periorificial maculopapular rash. Culture identified *Pseudomonas aeruginosa*, and a 3-week course of ciprofloxacin was prescribed. Although the purulent component resolved, erythema and pruritus persisted. In August, a third episode of purulent drainage prompted empiric treatment with ciprofloxacin and intraperitoneal ceftazidime. *P. aeruginosa* was again isolated. Given the refractory clinical course, the Tenckhoff catheter was removed, and the patient was transitioned to hemodialysis. Remarkably, all skin lesions resolved shortly thereafter.

Due to the patient's atopic background, persistent ES erythema, maculopapular rash and pruritus at the exit site, patch testing was performed to investigate a potential hypersensitivity reaction to the Tenckhoff catheter material. Three panels of materials were tested, including standard series for plastics/adhesives (24 allergens), metals (51 allergens) and a basic series (35 allergens). It was also tested isolated silicone, polytetrafluoroethylene and a small fragment of the peritoneal dialysis catheter. No hypersensitivity reaction occurred to the isolated silicone (the main component of the Tenckhoff catheter used at our center) or to any of the materials contemplated in the three panels. However, a pronounced cutaneous reaction (+++), with coalescing vesicles and erythema, was observed in response to the catheter fragment.

ESI diagnosis is often based on clinical signs such as erythema, tenderness and discharge. Yet similar findings may also result from non-infectious etiologies like contact dermatitis. Previous reports have described pericatheter rashes caused by antiseptics such as povidone–iodine, octenidine or topical antibiotics.[1–3] In contrast, reactions to the catheter material itself are rarely reported. Kurihara et al.[4] first described such a case, with patch test positivity to silicone-containing catheter and Patel et al.[5] later reported a similar case, attributing symptoms to "silicone allergy" based on a patch test with catheter fragments—a conclusion challenged by subsequent authors[6] who argued that silicone is unlikely to be antigenic and pointed instead to chemical additives or sterilizing agents as more plausible triggers. More recently, a case of systemic contact dermatitis was attributed to silicone without confirmatory testing, as patch testing was not performed and the Drug-Induced Lymphocyte Stimulation Test (DLST) was negative, possibly due to concurrent corticosteroid use.[7]

In our case, extensive patch testing revealed a strong (+++) reaction exclusively to a fragment of the peritoneal dialysis catheter, while no reaction was elicited by isolated silicone or by the allergens included in three standard patch test panels. An important limitation should be acknowledged: the test series did not include all components listed in the peritoneal catheter manufacturer's material specifications—namely, polyester, polyvinylidene fluoride, or Pebax—nor did they include ethylene oxide, a sterilization agent. As such, the precise antigen responsible for sensitization remains undetermined. Nonetheless, isolated silicone was excluded as the sensitizer material.

This case underscores the importance of considering allergic contact dermatitis in patients with persistent exit-site inflammation despite appropriate antibiotic therapy, especially in individuals with atopic backgrounds. Early recognition and diagnostic patch testing may prevent prolonged antibiotic exposure and technique failure.

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