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Case Report

Irritant Contact Dermatitis at Peritoneal Dialysis Exit Site Due to Misuse of Nitrofurazone: Case Series

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ABSTRACT

Erythema around the catheter exit site in peritoneal dialysis patients occurs usually due to exit-site infections, but also rarely develops due to noninfectious causes. The absence of purulent drainage, pain, or edema, and the characteristic appearance of lesions with negative culture results are supporting findings for irritant contact dermatitis. Here we discussed the development of irritant contact dermatitis around the catheter exit site due to the misuse of nitrofurazone in peritoneal dialysis patients. Nitrofurazone should be avoided in exit-site care due to its irritant potential.

Keywords: Irritant contact dermatitis, nitrofurazone, peritoneal dialysis

INTRODUCTION

Erythema around the peritoneal dialysis (PD) catheter in a PD patient occurs usually due to catheter exit-site infection. Catheter exit-site infection is a leading risk factor for peritonitis which may cause PD failure, and even death (1,2). Daily topical application of antibiotic-containing preparations to the exit site is recommended in current PD guidelines to reduce exit-site infection risk (3). Erythema around the PD catheter may rarely develop due to noninfectious reasons like a thermal burn, friction, chemical irritant exposure, and allergic reasons (4). Here we presented PD patients with irritant contact dermatitis due to misuse of topical nitrofurazone.

CASES

A total of four PD patients aged 45-64 years admitted with erythema and itching around the PD catheter exit site. Patients denied abdominal pain, fever, cloudy dialysate, and purulent drainage from the exit site. They started to use topical antibiotic cream for exit-site care regularly after recommended being in the PD unit. We learned that nitrofurazone was first used in the hospital as it was the only available topical antibiotic cream, and they continued to use nitrofurazone without a prescription due to its low price. Their vital signs were stable. Abdominal examination was normal (**Table 1**). The lesions around the catheter exit site had a sharp demarcation and were limited to the contact area in all patients. Vesicles on the erythematous base were observed (**Figure 1**). Demographic and clinical features were summarized in the table. Irritant contact dermatitis due to nitrofurazone was diagnosed in all cases. Chronic irritant contact dermatitis was thought in case 4 due to hyperpigmented erythematous plaque with squam and sharp demarcation. Nitrofurazone was discontinued. The topical steroid was started. Findings were regressed in the follow-up (**Figure 2**).

DISCUSSION

Erythema around the PD catheter should be accepted as infectious until proven otherwise, but noninfectious reasons should also be considered in the differential diagnosis (1). Contact dermatitis around the PD catheter exit site was reported in a few patients: one due to gentamicin, two children and one adult due to povidone-iodine, another case due to octenidindihydrochloride+phenoxyethanol, one silicon allergy due to Tenckhoff PD catheter (1,4-7). In our

Table 1. Clinical features of patients

	Case 1	Case 2	Case 3	Case 4
Age (years)	64	45	54	54
Gender	Female	Male	Female	Female
Primary kidney disease	DNP	DNP	DNP	Glomerulonephritis
PD program	APD	CAPD	CAPD	APD
Duration of PD (months)	20	13	6	18
Erythema around catheter	Present	Present	Present	Present
Itching	Present	Present	Present	Present
Abdominal pain	Absent	Absent	Absent	Absent
Fever	Absent	Absent	Absent	Absent
Cloudy diyalisate	Absent	Absent	Absent	Absent
Drainage around catheter	Absent	Absent	Absent	Absent
Trauma to exit-site	Absent	Absent	Absent	Absent
Recent changes in use of bandage	Absent	Absent	Absent	Absent
Recent change in the use of povidone-iodine	Absent	Absent	Absent	Absent
Exit-site culture	Negative	Negative	Negative	Negative
Topical agent used	Nitrofurazone	Nitrofurazone	Nitrofurazone	Nitrofurazone
Frequency of exit-care	Every other day	1 in 3 days	1 in 3 days	3 per week

DNP; diabetic nephropathy, PD; peritoneal dialysis, APD; assisted peritoneal dialysis CAPD; continuous ambulatory peritoneal dialysis

cases, irritant contact dermatitis was developed due to topical nitrofurazone application around the exit site.

Irritant contact dermatitis is the most common type of contact dermatitis. It occurs due to physical, mechanical, or chemical irritation. Activation of the natural immune system is the underlying pathophysiology. Skin barrier disruption may lead to cellular changes, an increase in proinflammatory mediators, and T lymphocyte activation. The concentration of the irritant substance, duration of exposure, and frequency of exposure may affect the irritant potential of the substance (9). In our cases, lesions appeared after the increase in the frequency of application.

The international society of peritoneal dialysis (ISPD) suggests the use of topical application of antibiotic cream like mupirocin or gentamicin to the catheter exit site (3). Nitrofurazone is a broad-spectrum antibiotic that is more commonly used for ulcer, burn, or skin infections. It has a relatively high risk of contact dermatitis (10). Topical nitrofurazone application was not recommended for routine PD exit-site care. We describe for the first time irritant contact dermatitis

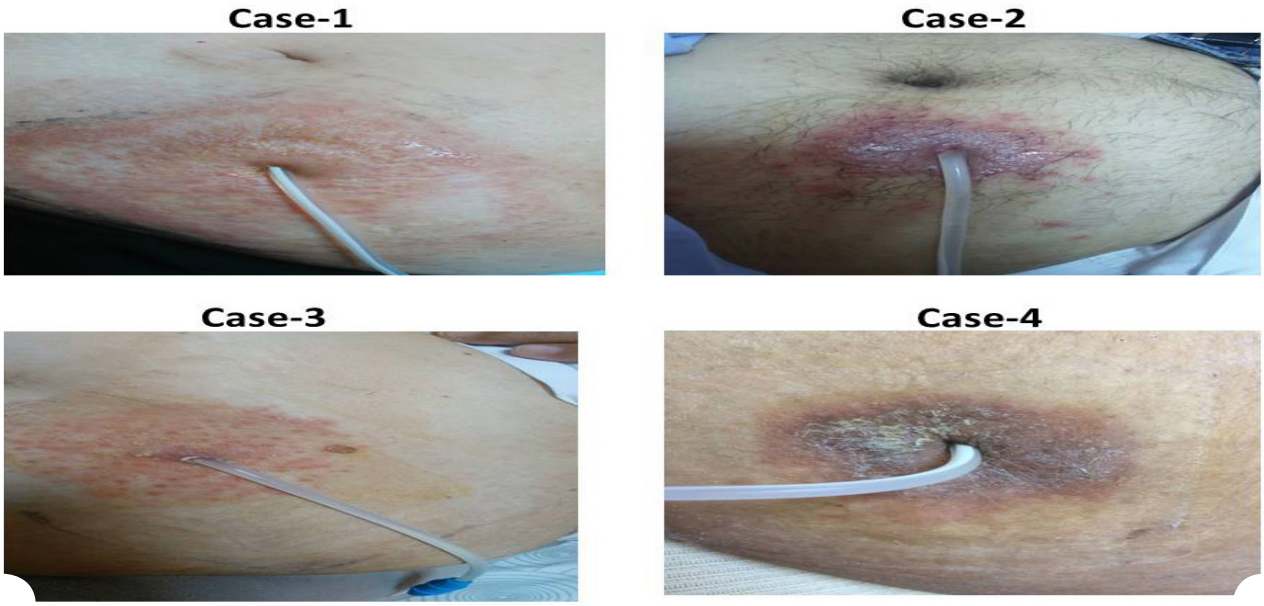

Figure 1. Peritoneal dialysis catheter exit-site at diagnosis

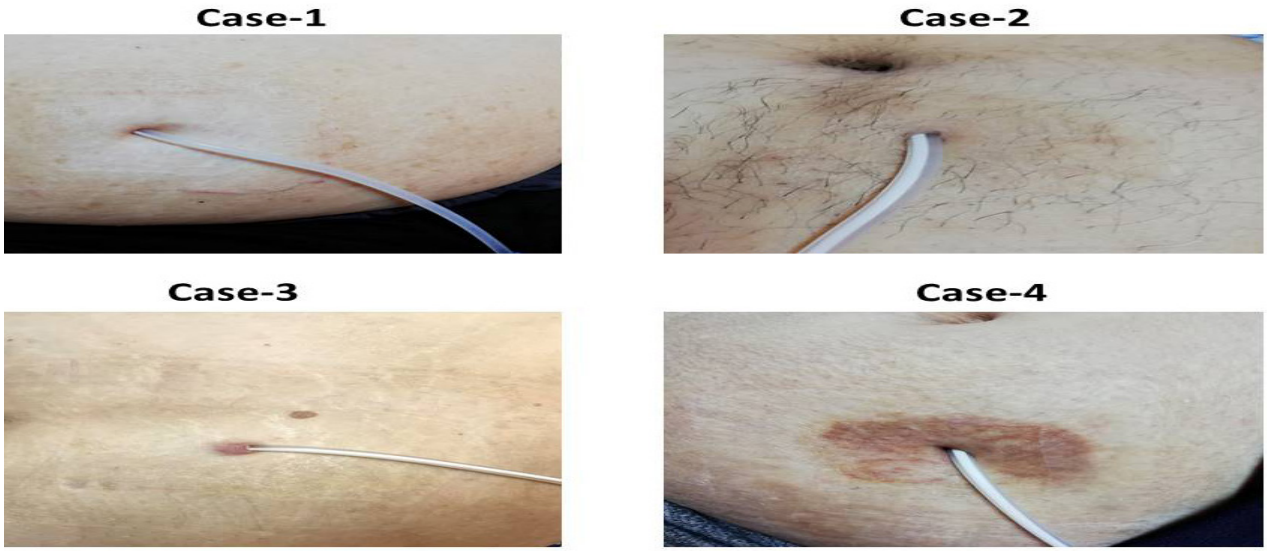

Figure 2. Peritoneal dialysis catheter exit site after one month

around the PD catheter exit site due to misuse of topical nitrofurazone.

Diagnosis of irritant contact dermatitis is usually clinical (9,11). Patients with acute irritant contact dermatitis may admit with erythema, edema, exudation, bulls, and erosions. Burning, pain, and itching may coexist. The lesion is limited to the contact area with sharp demarcation (9). Besides the characteristic appearance of the rash, negative Gram stain and culture of the PD exit site and favorable response to the withdrawal of the suspected agent may support irritant contact dermatitis (11). Lesion regresses by the discontinuation of contact, but may take weeks to months depending on the severity. Recurrent contact may lead to the development of chronic irritant dermatitis. A patch test may be carried out to exclude allergic contact dermatitis (9). Skin biopsy and immunofluorescence examination may be also used to confirm the diagnosis (6,8). Withdrawal of irritant factors is necessary for the treatment. The use of topical steroids in treatment is controversial (9). Irritant contact dermatitis was diagnosed by typical history and physical examination in our cases. The absence of purulent drainage with negative culture results was supporting findings, and lesions improved after the withdrawal of nitrofurazone. In conclusion, a differential diagnosis of exit-site infection should include irritant contact dermatitis. Misdiagnosis of irritant contact dermatitis may cause deterioration of lesions due to continuous exposure to an irritant factor and may cause unnecessary use of antibiotics (1). Topical agents used for exit-site care in PD patients should be checked during routine visits, and nitrofurazone should be avoided due to its irritant potential.

DISCLOSURES

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