

CONTACT POINT

Allergic contact dermatitis caused by a polyurethane catheter

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We report a case of allergic contact dermatitis caused by a peripherally inserted central catheter (PICC). PICCs provide a form of intravenous access that can be used for a prolonged period of time, for example, during the administration of chemotherapy regimens, antibiotic therapy, and parenteral nutrition.

CASE REPORT

A 36-year-old non-atopic man presented with itchy dermatitis involving the arm that had appeared 4 months before the visit. From 2014, the patient had required prolonged intravenous antibiotics owing to cystic fibrosis while he was waiting for lung transplantation. Sharply defined, erythematous and oedematous scaly plaques developed at the site of contact with the intravenous catheter (Figure 1); slight improvement was achieved with topical corticosteroids.

Patch tests were performed with the SIDAPA baseline series and the patient's own products, applied on his back with Van der Bend Square Chambers (Van der Bend, Brielle, The Netherlands), and fixed with Medipore tape (3M, Minneapolis, Minnesota); readings were performed on day (D) 2, D4, and D5, according to ICDRG/ESCD recommendations. A strong response (++) was elicited by a fragment of the catheter and by the "T" proximal connector (both tested "as is"),

whereas other components of the catheter, including the Grip Lock, metallic stylet, and tapes, did not cause positive reactions. Patch testing with the isocyanate series (Chemotechnique Diagnostics, Vellinge, Sweden) was performed 1 month later, and yielded a ++ reaction to diaminodiphenylmethane (MDA) 0.5% pet., whereas fragments of 2 different silicone catheters gave negative results (Table 1). Considering that isocyanates are important causes of occupation-related asthma, and the risk to the patient of pulmonary complications, IgE specific for isocyanates was investigated, and was in the normal range (0.10 kU/L).

The catheter Lifecath PICC Easy (Vygon, Aachen, Germany) was composed of biostable, totally radiopaque polyurethane. According to the manufacturer, there is no detailed information available concerning the composition of the catheter. The dermatitis improved with the use of topical corticosteroids, and the patient has remained asymptomatic while using silicone catheters.

DISCUSSION

MDA (CAS no. 101-77-9) is an aromatic diamine that is used in the production of plastics, polyurethanes, rubber, epoxy resins, insecticides, and germicides. In 1976, Rothe observed that MDA can be

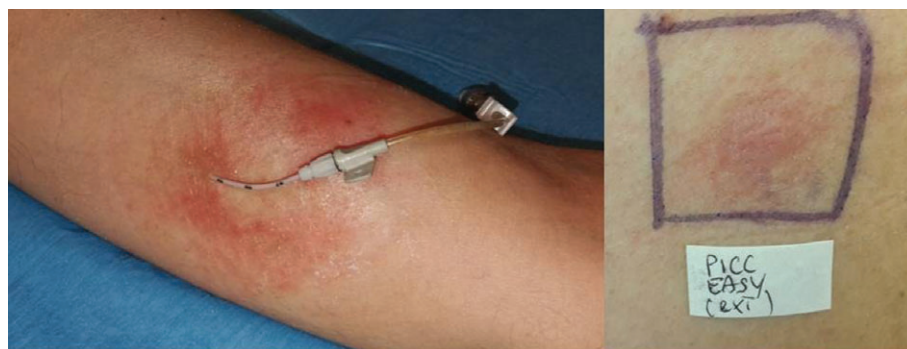


FIGURE 1 Clinical lesion caused by a positive patch test reaction to polyurethane catheter

TABLE 1 Patch test results

	Concentration	Patch test reading D2–D5
Diphenylmethane-4,4'-diisocyanate	2% pet.	–
Toluene-2,4-diisocyanate	2% pet.	–
Diaminodiphenylmethane	0.5% pet.	++
1,6-Hexamethylene diisocyanate	0.1% pet.	–
Isophorone diisocyanate	1% pet.	–
Isophorone diamine	0.1% pet.	–
Lifecath PICC Easy (Vygon)	"as is"	++
Lifecath PICC Easy "T" proximal connector (Vygon)	"as is"	++
Medipore Medical Tape (3M)	"as is"	–
Nutricath Tunnel Silicone Catheter (Vygon)	"as is"	–
Groshong silicone PICC (Bard)	"as is"	–

formed by hydrolysis of 4,4'-diphenylmethane diisocyanate, and considered positive patch test reactions to MDA to constitute an important marker for isocyanate sensitivity.^{1,2} This conclusion was confirmed by Goossens et al, who diagnosed 9 of 22 patients with occupation-related allergic contact dermatitis caused by isocyanates and/or polyurethanes who reacted only to MDA.¹ More recently, in a workshop handling polyurethane foams, 6 of 8 workers showed positive patch test reactions to MDA.² To our knowledge, only 2 cases of contact dermatitis caused by a similar polyurethane central catheter have been published so far, and the causative allergens were not identified.^{3,4} Even though MDA was not listed in the composition of the PICC, clinical relevance was confirmed by positive reactions to the catheter and by subsequent clearance of the dermatitis through avoidance of exposure. MDA was confirmed to be a marker for isocyanate

sensitivity, and, in cases of skin problems caused by polyurethane catheters, silicone materials can be considered to constitute a good alternative.

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Conflict of interests

The authors declare no potential conflict of interests.

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