

Short Communication

Contact dermatitis from acrylates in an electrosurgical earthing plate

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Modern electrosurgical earthing plates contain an adhesive to fix the grounding plate to the skin.

Case Reports

Patient no. 1 was a 36-year-old woman who had an electrosurgical earthing plate attached to her thigh during a caesarian section. 3 days after the operation, a painful red urticated lesion, which later turned bullous, appeared at the site of the earthing plate. The nursing staff initially presumed a burn reaction due to the coagulation procedure. After involution of the lesion, the area remained depigmented. Patch testing with the European standard series gave a positive reaction to fragrance mix (+). The earthing plate (as is) was strongly positive (+++, bullous reaction) at day (D) 2, 3. Later, an acrylate series was tested (Table 1). A bullous reaction was seen on D 2 and 3 to 2-hydroxyethyl acrylate. The patient reported that she had used sculptured (artificial) nails in the past, but that she had stopped using them because of a severe allergic reaction. She had followed a training course as a nail stylist, but had had to quit because of allergic reactions.

Patient no. 2, a 76-year-old lady, had a severe reaction to an electrosurgical earthing plate after arterial bypass surgery. She found an itchy bullous lesion on the area where the earthing plate had been attached to her thigh. She was known to have atopic pulmonary disease and

psoriasis. Patch testing revealed no reactions to the European standard series. A bullous patch test reaction was found after testing the earthing plate. The acrylate series showed positive reactions to several acrylates (Table 1). A bullous (+++) reaction was seen to 2-hydroxyethyl acrylate at D 2 and 3. She had never used artificial nails. Sanitary towels caused itching, maybe due to the adhesive strip to fix the towel to the underwear.

Patient no. 3 was a 32-year-old woman, who had undergone surgery for a hernia nuclei pulposi. After the operation, she had an intense erythematous reaction on her left thigh, at the place where the earthing plate had been attached. There was no atopy in the patient's history or in the family. On patch testing, no reactions to the European standard series were found. A severe bullous reaction to the earthing plate patch was found at D 2 and 3. The acrylate series showed positive reactions to several acrylates (Table 1), as well as a bullous (+++) reaction to 2-hydroxyethyl acrylate. She had used artificial nails in the past, but had stopped using them because of an allergic reaction. She also had itching from sanitary towels, possibly due to an acrylate-containing adhesive strip.

Patient no. 4 was a 30-year-old woman, who, on the 4th day after a caesarian section, developed a bullous reaction on her thigh, where the earthing plate had been attached. To the standard series, a reaction to balsam of Peru (+) was found. The earthing plate, as is, showed a

Table 1. Patch test results at D 3

Test preparation	Case no. 1	Case no. 2	Case no. 3	Case no. 4
electrosurgical earthing plate as is	+++	+++	+++	+++
bisphenol A dimethacrylate (BIS-GMA) 2% pet.	-	-	-	-
2,2-bis(4(methacryloxy)phenyl)-propane (BIS-MA) 2% pet.	-	-	-	-
diurethane dimethacrylate 2% pet.	-	-	-	-
ethyl acrylate (EA) 0.1% pet.	++	++	++	+++
ethyleneglycol dimethacrylate (EGDMA) 2% pet.	++	-	++	++
ethyl methacrylate (EMA) 2% pet.	-	+	++	-
2-hydroxyethyl acrylate (2-HEA) 0.1% pet.	+++	+++	+++	+++
2-hydroxyethyl methacrylate (2-HEMA) 1% pet.	++	++	++	++
methyl methacrylate (MMA) 2%	-	-	-	-
triethyleneglycol dimethacrylate (TREGDMA) 2% pet.	-	-	-	-

Commercially available test preparations were obtained from Trolab (Hermal/Germany).

bullous patch test reaction at D 2 and 3. The acrylate series showed several positive reactions and bullous (++++) reactions to 2-hydroxyethyl acrylate and ethyl acrylate. This patient had also used sculptured nails and had stopped using them because of allergic reactions.

Discussion

4 patients had severe allergic reactions at the position of the earthing plate after surgery. This was due to the acrylate-containing adhesive of the earthing plate. The manufacturer kindly informed me that it contained 2-hydroxyethyl acrylate and 2-hydroxyethyl methacrylate, but had never heard of any allergic reactions due to the plate. Since these reports, a warning to acrylate-sensitive patients has been added to the information sheet of the earthing plate. Since, in 3 of the 4 cases, the patients were probably sensitized by sculptured nails, patients should be asked before operations if they are allergic to acrylates, and especially if they have had any reactions to sculptured nails.

There must have been more reactions to earthing plates than previously reported (1), since the increased use of acrylates, for instance, in sculptured nails (2), paints, adhesives (3) and dental materials (dental technicians). Reactions to electrosurgical earthing plates

after operations are probably mistakenly interpreted as burns, because of the intense red reactions. No acrylate is present in the European standard series. There have been difficulties in compiling an acrylate screening series (2). Since patch test sensitization by acrylates is described (4), it might be thought advisable to use only 1 acrylate, for instance ethyl acrylate, as a screening agent, as suggested by Koppula et al. (2). Patch testing 2-hydroxyethyl acrylate at 0.1% pet. is probably still too high, in view of the severe bullous patch test reactions in this investigation.

References

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