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Allergic Contact Dermatitis After Bone-anchored Hearing Aid Surgery

To the Editor: Bone anchored hearing aids (BAHA) are well established and effective method of auditory rehabilitation; especially for the patients who cannot use the conventional air conduction hearing aids. As in many surgical procedures, it, however, has some complications, too. The most common complications of these devices are related to the skin around the abutment. Herein, we present a patient who had allergic contact dermatitis against the nitrofurazone, which is one of the most commonly used local antibiotics in the clinical practice. To the knowledge of the researchers, it is the first reported allergic contact dermatitis case after BAHA surgery in the literature.

The patient was a 46-year-old man with acquired mixed hearing loss because of bilateral chronic otitis media. He was implanted with a percutaneous BAHA under local anesthesia and discharged from the hospital in the following day with a dressing include nitrofurazone (furacin). The healing cap over the abutment was removed at the end of first week, and during this visit, a Holger grade 2 skin reaction was noticed. The dressing was renewed with nitrofurazone impregnated strips under the healing cap. In the next visit (2 days after), we determined a grade 3 skin reaction with systemic erythematous skin eruptions on the body, bilateral arms, and legs (Fig. 1B,C). Physical findings were in normal limits. Blood analysis showed the following: leukocytosis, 11.6 103/μL (64.2% of neutrophil, 20.3% of lymphocyte); normal sedimentation rate, 7 mm/h ($n < 20$ mm/h); high C-reactive protein, 1.95 mg/dL ($n < 0.5$ mg/dL), and high total Immunoglobulin E, 312 kU/l ($n < 20$). Clinical diagnosis was allergic contact dermatitis with local infection. Amoxicillin-clavulanate of 2 g 4 times daily was empirically used. In addition, topical fusidic acid + betametasone 4 times a day and systemic steroid therapy (metil-prednisolon 1 mg/kg) were begun. On the fourth day, culture from the local wound was positive for *Enterococcus faecalis* and the isolate was sensitive to linezolid. Based on this culture result, the antibiotic treatment was changed to linezolid (150 mg/kg/day). Implant stability quotient measurements were performed regularly and these measurements were remained stable between 55 and 60. The systemic skin eruptions were regressed within 2 days and the linezolid was stopped 10 days after the initiation of therapy with the



FIGURE 1. Grade 3 skin reaction with skin overgrowth (A), systemic erythematous skin eruptions on the body (B), Dressing with local fusidic acid + betametasone under healing cap (C), 45 days after the initial therapy (D), Patch test with furacin as is, nitrofurazone (0.2 %, 0.1 %, and 0.05 % in petrolatum) (E), Grade 3 allergic reaction with vesicles (F).

negative control cultures. The local dressing with fusidic acid + betametasone was continued for 2 weeks (Fig. 1C). The patient started to use the sound processor 45 days after the implantation and had no problem after the loading (Fig. 1D). The nitrofurazone allergy has been proven with the patch test with furacin as is, nitrofurazone (0.2%, 0.1%, and 0.05% in petrolatum) (Fig. 1E-F).

Furacin (Seid, Barcelona, Spain) is a topical antimicrobial drug that is used for topical wounds, burns, skin infections, and ulcers. It contains nitrofurazone 0.2% and, as vehicle, polyethylene glycol. Bajaj et al studied on 390 patients with suspected contact dermatitis to topical drugs and found that nitrofurazone is the most common sensitizer among them.¹ Şen et al² found similar results with 129 patients, too. Repeated study by Bajaj et al in the 2007 with 1000 patients brought out that nitrofurazone sensitivity was decreased from 36.2% to 6%. And these results were explained with the declining usage of nitrofurazone over the years in the India.³

Our patient had a Holger grade 3 reaction with skin overgrowth that include granulation tissues with hypertrophic skin around the abutment and treated with local and systemic therapy. In such cases, it is possible that the infection may cause osteitis, which is one of the reasons of implant loss.^{4,5} So that, we checked the implant stability with implant stability quotient measurements and with these measurements we did not performed an implant removal procedure. We chose a mixed ointment that includes local antibiotic and local steroid to solve both infection and skin overgrowth problem.

With this report, we want to draw attention to the allergenic potential of the nitrofurazone. It must be used carefully after these kinds of surgeries. In addition, this report may be important for the BAHA surgeons that, this kind of aggressive reactions may be treated with careful clinical follow up and treatment processes without implant removal.

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