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Case report

A case of necrotizing fasciitis from a pedicure: when beauty centers become life-threatening

Mirco Pozzi[1], *Roberto Cuomo*[1], *Francesco Ruben Giardino*[1], *Giuseppe Nisi*[1], *Luca Grimaldi*[1]
[1]Department of Plastic, Reconstructive and Aesthetic Surgery, Policlinico Santa Maria "Le Scotte" University of Siena, Italy, Siena

Abstract. *Introduction*: in a historical moment where there is an increasing use of beauty center, we report a case of necrotizing fasciitis occurred after a pedicure, with the aim of clarifying the safety of these aesthetic treatments. *Case report:* we discuss a case of left foot necrotizing fasciitis as consequence of removing a plantar callus. The patient is a 49 years old man; he is hypertensive, and diabetic not controlled. We report our experience showing the clinical manifestation and the tricky profile of the patient; then we reflect on the safety profiles of these aesthetic treatments. *Discussion*: some bacterial infections of soft tissue after pedicure and manicure are reported in Literature. Mycobacteria seems to play a prevalent role, mostly after a peculiar practice of "fish pedicure". Our experience shows how the combination between a patient with complicated profile and poor hygienic measures can have catastrophic consequences. *Conclusion*: the aim of this article is to raise awareness on the serious consequences that can arise from banal aesthetic procedures. Furthermore, we want to recommend more control over these treatments performed in Beauty Salon, considering the large turnout of people, even clinically sensitive. (www.actabiomedica.it)

Key words: necrotizing fasciitis, beauty center, plantar callus, pedicure

Background

More and more people have recourse to beauty center for body care; in fact it is estimated that 6 billion dollar are spent in America for manicure and pedicure. This branch of the beauty industry witnessed unprecedented growth (1).

However, some basic hygiene rules such as hand washing are not always respected in these centers and it has important consequences for customer health (2).

Furthermore, it can happen that the work tools are shared, without being sterilized first, with the consequent transmission of infections between one customer and the other (3).

Currently there are no studies in the literature that report the incidence of bacterial soft tissue infection resulting from treatments performed in beauty centers, such as pedicures and manicures.

Anecdotal cases of mycobacterial infections and two cases of staphylococci after aesthetic practices are instead reported (4-6).

A case of necrotizing fasciitis caused by the removal of a plantar callus in a beauty center is described below.

Case report

49 years old man, hypertensive and diabetic, non-smoker neither alcol consumer.

He came to our hospital for suspected left foot infection following the removal of a plantar callus in a beauty center. He was then hospitalized and a diagnosis of necrotizing fasciitis was made.

The patient reported that he had gone to a beauty salon a week ago for removing a callus. After a few hours he developed local inflammation. The attending

physician prescribed Amoxicillin and clavulanic acid for one week.

At the physical examination there was a necrotic, purulent and exuding tissue of blackish gray color affecting the dorsal region of the left foot; there was an excavated, necrotic and purulent lesion in correspondence of the left plantar region, to the level of the second metatarsal, where the callus was removed.

Lastly, there was an evidence of erythema, skin distress and edema of the regions saved from the necrosis of the foot and of the distal third of the left leg.

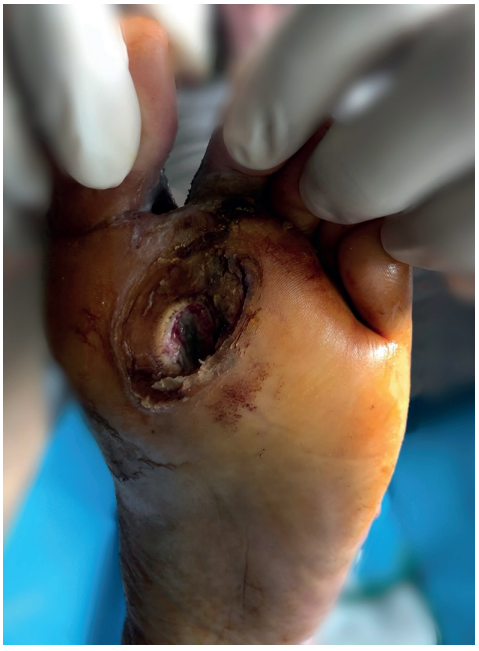
The diagnostic suspicion of necrotizing fasciitis was based on the objectivity found.

The CT scan with and without contrast described a gangrenous inflammation of the soft tissues of the left foot and of the distal third of the leg, with involvement of the muscular fascia, which seemed to start from the loss of substance localized in the sole of the left foot. In the context there was a clear collection of gas.

It was also reported a phlogistic bone erosion and a diffuse calcific arteriopathy that complicated the case.

The patient was then subjected to an aggressive and radical necrosectomy with important demolition in order to delimit the macroscopically vital and bleeding skin margins. (*Figure 1,2,3,4*) In addition, we collected tissue and liquid for a microbiological and histological examination.

An extensive disinfection of the surgical margins was performed. Lastly, we medicated with iodoformic gauze and sterile cover.



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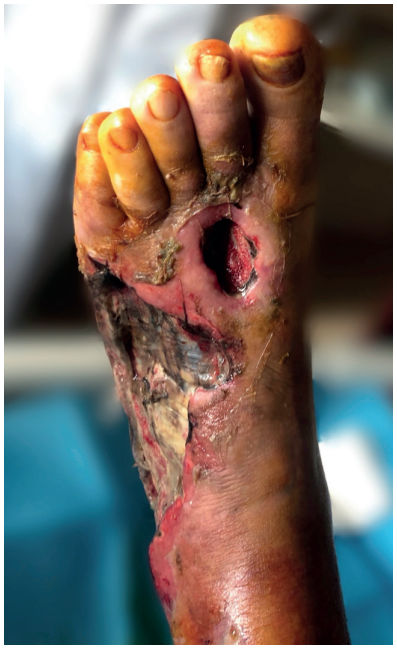

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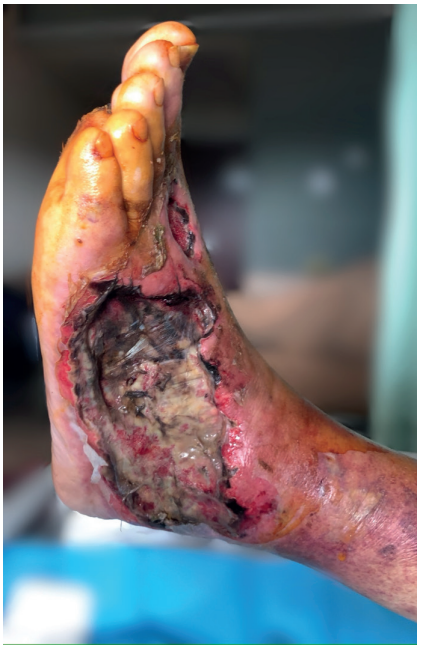

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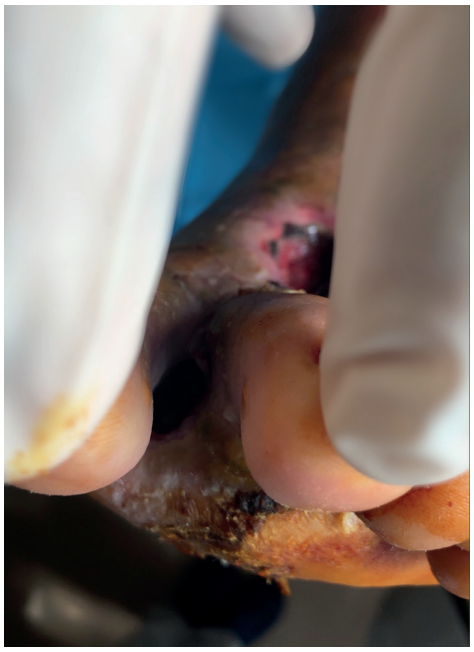

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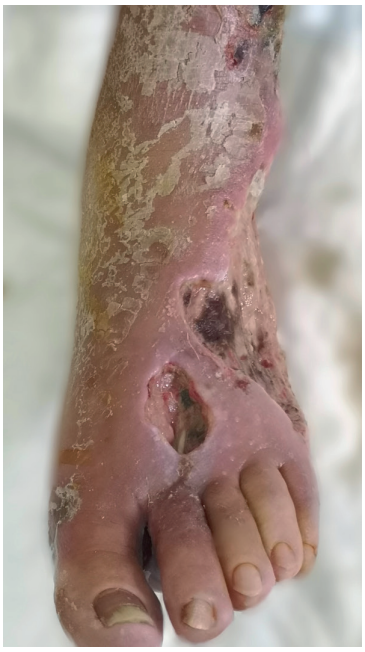

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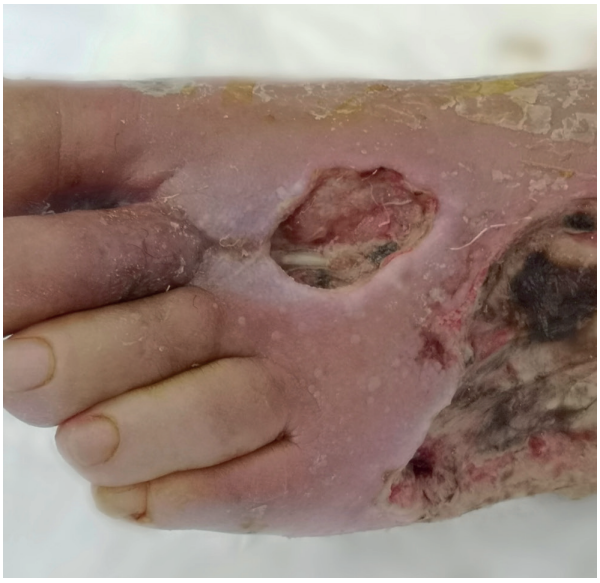

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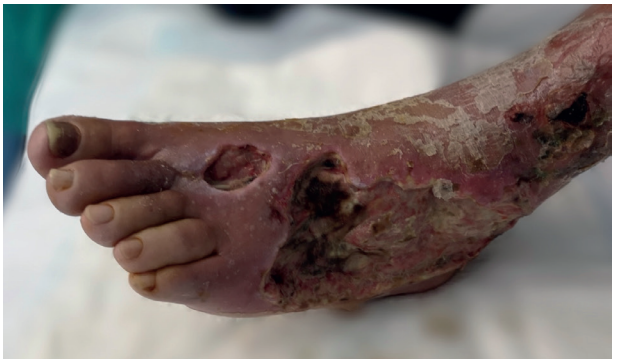

Figure 7.

The histology described a necrotizing exudative inflammation, with colonies of bacteria. In particular, Streptococcus Constellatus, resistant to Cephalosporin and Gentamicin, and Staphylococcus Hominis, resistant to Methicillin, were isolated from the microbiological buffer. Nevertheless, due to the presence of the gas, our clinical suspicion was oriented towards the presence of anaerobes. Blood cultures were negative.

We also evaluated the possibility of apply a negative pressure wound therapy, which we eventually postponed after the resolution of the underlying infectious problem, to avoid the risk of a new anaerobic infection (7).

We started therapy with Clindamycin + Daptomycin and Meropenem; then we replaced Daptomycin and Meropenem with Vancomycin because they were not tolerated by the patient.

During the hospitalization, we performed a second surgical toilette. (*Figure 5,6,7*) At the end of

the Vancomycin cycle, we administered Teicoplanin and Piperacillin/Tazobactam, with a clear clinical improvement.

Unfortunately, the patient developed IRA of a possible pharmacological cause, therefore the Teicoplanin was replaced by the Linezolid.

The acute episode was resolved and the patient, with a general and local good condition, was pointed to a hyperbaric chamber path.

Discussion

This case leads us to reflect on the serious consequences that can derive also from banal aesthetic treatments, if not performed according to strict rules.

In fact due to a simple callus, our patient has developed a necrotizing fasciitis, surgical urgency, which required aggressive treatments for its resolution.

Therefore, we decided to highlight two fundamental points: the presence of bacterial infections deriving from aesthetic care practices, an indicator of poor attention, and the need to personalize or limit these treatments, even trivial, based on the customer in front of you.

Some cases of bacterial infections after treatments in beauty salon have been described in the literature; in particular there is a good prevalence of atypical Mycobacteria such as M. fortuitum, M. chelonae, M. abscessus, M. bolleti and M. massiliense after fish pedicures/footbaths (4, 8, 9).

Mycobacteria grow in these colture broths and they usually cause cutaneous/subcutaneous infections, such as furuncolosis, cellulite, abscesses; they rarely produce disseminated disease (10).

Therefore, we must pay attention to the fact that these treatments, although substantially safe, have a modest risk profile to consider.

Literature reports also two cases of infection by Staphylococcal Aureus (one of these MRSA), after pedicure, whit development of cellulite.

Our case is part of the previous logic and shows how even the banal removal of a plantar callus can cause necrotizing fasciitis, in healthy patient except for the presence of diabetes mellitus.

Upon closer analysis of the literature we found the evidence that in the diabetic patient any kind of pedicure should be avoided, as they are often affected by peripheral sensory neuropathy (11).

In addition, due to the collection of gas found in the CT scan we hypothesized the probable concomitant infection of anaerobes, who have found fertile ground in a complicated patient like ours. In fact he is diabetic with a glycated hemoglobin around 10% and he is affected by a generalized calcific vasculopathy of the lower limbs

Finally, we want to underline how the awareness of his clinical situation was extremely low, probably due to unspecified psychiatric comorbidities.

Therefore, the clinical case shows how a set of even trivial causes such as an incorrect aesthetic approach to a diabetic patient, poor hygiene control and initial underestimation of the situation could have catastrophic consequences on a patient's health.

Conclusion

In conclusion, our case of necrotizing fasciitis developed by a pedicure, is unique in literature. The typical clinical features of necrotizing fasciitis have imposed an aggressive attitude, not only from a surgical but also from a medical point of view.

This made it possible to avoid the death of the patient and the amputation of the limb, which is not always obvious (12).

We want also to highlight the complexity of managing the patient with diabetic comorbidity and not entirely aware of the seriousness of the situation, which made a multidisciplinary approach necessary.

To avoid these kind of medical emergencies, It would be necessary to educate aesthetic operators to respect much more the basic hygiene standards. It would also be necessary to check more strictly that these are respected. Evidently a problem that affects even the most developed countries (13).

Conflicts of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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Correspondence:
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Francesco Ruben Giardino, MD
Policlinico Santa Maria “Le Scotte”, 53100 Siena
Segreteria Di Chirurgia Plastica, Viale Mario Bracci, 16, Siena
E-mail: f.ruben.giardino@gmail.com