



## A CASE OF FISH SPA INDUCED FUNGAL INFECTION

### Pharmacology

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### ABSTRACT

Fish spas originated in Turkey and are used for their cosmetic treatment. In these spas clients submerge their feet, hands or their whole body in basins with *Garra rufa* fish. The most important health risk from fish spa is the possible transmission of infections. These infections can be bacterial, viral or fungal in origin. We report a case of 63 year old, educated, well informed female who received foot treatment in a fish spa. Ten days after the foot spa she developed acute erythema of the left foot. The patient was treated with griseofulvin and terbinafine for 4 weeks. The patient recovered after a therapy of four weeks.

### KEYWORDS

Fish spas, dermatitis, erythema

### INTRODUCTION

Fish spas originated in Turkey and are used for their cosmetic and relaxing treatment. In these spas clients submerge their feet, hands or their whole body in basins with *Garra rufa* fish[1]. The therapy involves submerging the body part for 15 to 30 minutes in the fish tank during which the fish nibble on dead and thickened skin.[2] In addition to cosmetic treatment the fish spas are used to remove superficial scaly patches in patients suffering from psoriasis and eczema.

The most important health risk from fish spas is the possible transmission of infections which can be bacterial, viral or fungal in origin. In these spas the same water and fish are used for several individuals,[2] this can result in transmission of infection from fish or from water to man. The water in these fish tanks is maintained at a temperature of 25 to 30C; this temperature provides an ideal environment for bacterial growth. The organisms from these fish spas that have been implicated in causing infections in humans include staph aureus[3], MRSA[4], *Vibrio Vulnificus*, *Aeromonas*, *S. Agalactiae*[5] and atypical mycobacteria esp. *M. Fortuitum*. Some of the bacteria identified from these fish are also capable of causing invasive soft tissue infections. The clinical presentation of staphylococcal infection is that of maceration, purulent discharge, itching and burning. *Salmonella* species surviving in fish can cause cellulites or wound infection especially in immunocompromised patients. Atypical mycobacteria have been associated with furunculosis. Similarly, *Pseudomonas aeruginosa* is another rare cause of folliculitis which develops due to exposure to contaminated water from the spa baths.[6]

Apart from bacteria, fungi such as dermatophytes and yeasts can also cause infections in humans from fish spa therapies. Damage caused by the fungi to the stratum corneum facilitates secondary bacterial infections.[1] *Tinea Pedis* or dermatophytosis of the feet is one of the commonest types of superficial fungal infections. It is rare in children and uncommon in adult females because of practice of going bare feet and less occlusive foot wear.

Antibiotics like minocycline, trimethoprim sulfamethoxazole combination and clarithromycin are used for a duration of few weeks to few months for the treatment of these infections. Some of these isolates are resistant to antimicrobial drugs such as fluoroquinolones and tetracyclines.[5] Patients who are immunocompromised or are suffering from diabetes are more vulnerable and should avoid fish spa treatment.

### CASE REPORT

Dermatitis due to fish pedicure has been seen for a number of years. We report a case of 63 year old female. The patient visited the fish spa for cosmetic purposes. The patient reported that she had immersed both her feet in the spa tank for 15 to 20 minutes. There was no immediate

complaint but ten days after the foot spa she developed acute erythema of the left foot.



Image 1: Left foot showing acute erythema. She was put on prednisolone 20 mg daily orally for four days. Following therapy with corticosteroid the erythema subsided. As the steroids were tapered erythema re-appeared. This time the condition of the patient worsened. Larger area of the foot was involved now.



Image 2 and 3: Relapse after tapering the steroid

A differential diagnosis of cellulites was thought of, but the signs and symptoms with which the patient presented did not support the same. The patient did not respond to antibiotics as well. It was then thought that there can be underlying fungal etiology. Scrapings from the affected area were taken. These were tested for the presence of fungus. Even though these turned out to be negative patient was put on griseofulvin 250 mg BD and terbinafine 250 mg OD for 4 weeks keeping in mind the diagnosis of *Tinea incognito*. The patient recovered after a therapy of four weeks. The erythema subsided and patient recovered fully and is fit and fine after 6 months of follow up.

The author had never come across a case of fish spa induced fungal infection in his 40 years experience in dermatology practice. It was a therapy based diagnosis.

### DISCUSSION

The use of fish such as *Garra rufa* to treat skin conditions is known as Ichthyotherapy. The term *Ichthys* is a Greek term which refers to fish.

Studies have shown use of Ichthyotherapy in patients with psoriasis. In these patients a reduction in scales is observed as the fish feed on desquamating skin. These fish nibble on the affected and not on the healthy skin.[7] However, little is known about the pathogens which might be harbored by these fish and the risks this therapy can pose to the health of the individuals. People who are suffering from contagious infections may visit such spas. As these fish tanks may not be adequately sanitized between customers, these become source of infection for humans. Fish also produce waste and carry strains of various infectious bacteria. Already a few cases have been reported of fish spa induced infections. A case of fish pedicure induced mycobacteriosis infection has been reported where the patient presented with erythematous plaque on the foot.[8] *Mycobacterium marinum*, *M. fortuitum* and *M. chelonae* are some of the agents affecting the fish and they can easily cause infections in humans.[9] Studies on ornamental fish and their carriage water have shown a high prevalence of multidrug tolerant bacteria. [10]

It has been suggested that patients who are immunocompromised or are suffering from diabetes mellitus should avoid fish spa therapies. In these individuals fish spa therapy can predispose to cellulites and soft tissue abscesses.

The 63 year old patient in our study is a housewife. The patient is non diabetic and has no history of fungal onychomycosis. The patient reported the development of erythema, a few days after visiting the fish spa. This led us to suspect that the source of the infection may be the fish spa therapy. Superficial fungal infections are common treatable conditions which arise from organisms restricted to stratum corneum. The organisms responsible include dermatophytes like *trichophyton rubrum* (most common), *trichophyton mentagrophytes*, *candida*. [11]

In our opinion the incidence of infections caused in humans by ornamental fish and that too by fish spas is under reported. During the literature review for our case study we came across only a few case reports of fish spa induced skin infections. For us it was for the first time that we came across a case of fungal infection caused by fish pedicure. In our patient we suspect the etiology to be a fungus as the patient responded very well to antifungals and also did not report any relapse after therapy.

## CONCLUSION

In our case report the underlying etiology was fungal infection as the patient responded well to antifungal agents.

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