ABSTRACT

Topical or systemic antifungal therapy was administered to patients diagnosed with Malassezia folliculitis during the 5-year period between March 2007 and October 2013. The diagnosis of Malassezia folliculitis was established on the basis of characteristic clinical features and direct microscopic findings (10 or more yeast-like fungi per follicle). Treatment consisted of topical application of 2% ketoconazole cream or 100 mg oral itraconazole based on symptom severity and patients’ preferences. Treatment was given until papules flattened, and flat papules were examined to determine whether the patient’s clinical condition had “improved” and the treatment had been “effective”. The subjects were 44 patients (35 men, 9 women), with a mean disease period of 25 ± 15 days. In regard to the lesion site, the frontal portion of the chest was the most common, accounting for 60% of all patients. The mean period required for improvement was 27 ± 16 days in 37 patients receiving the topical antifungal agent and 14 ± 4 days in the 7 patients receiving the systemic antifungal agent. The results were “improved” and the treatment was “effective” in all patients. Neither treatment resulted in any adverse reactions. Although administration of oral agents has been recommended for the treatment of Malassezia folliculitis, this study revealed that beneficial results are safely obtained with topical antifungal therapy alone, similar to those of systemic antifungal agents.

Key words: Malassezia folliculitis, diagnosis, treatment, ketoconazole cream, itraconazole

Introduction

In 1968, Graham forwarded a disease concept designated as Pityrosporum folliculitis. Furthermore, Potter et al. emphasized in 1973 that this disease is not rare, although it easily goes unrecognized and is not uncommonly misdiagnosed as acne, folliculitis, or eczema. The genus Malassezia includes lipophilic yeasts present in the hair follicle infundibulum, with counts and species varying among sites. These yeasts undergo transition from the yeast to the mycelial form under certain conditions. Malassezia folliculitis occurs when Malassezia grows in yeast form in follicles under conditions such as high temperature and humidity, excessive sweating, being covered with clothes, cosmetics, or oil, and ultraviolet exposure. Malassezia folliculitis eruptions are commonly distributed over the neck, chest, back, and the extensor side of the upper arm. They also occur on the face in rare instances. They are dome-shaped erythematous papules or pustules 2-3 mm in size. Although they are on occasion confused with acne, there are few comedos, and they are characteristically accompanied by mild pruritus. The disease is diagnosed in patients with characteristic clinical features and clusters containing multiple yeasts (≥10 per visual field at 400 × magnification) under direct microscopic examination.

Although the results of topical or systemic antifungal treatment have been reported, there are persisting issues, such as adverse reactions associated with these drugs and the appearance...
of drug-resistant yeasts. Thus, there are as yet no internationally approved guidelines for its treatment.

Malassezia folliculitis is a common and well-known disease, although the number of reports is surprisingly low. We summarize herein the treatment results of patients with Malassezia folliculitis diagnosed in our department.

Subjects and Methods

We retrospectively analyzed the medical records of 44 patients receiving a diagnosis of Malassezia folliculitis during the 5-year period between March 2007 and October 2013.

For diagnosis, a pus specimen was squeezed out and collected from a papule or a pustule using ophthalmic tweezers in patients suspected of having Malassezia folliculitis, and it was then stained with acidic methylene blue. Malassezia folliculitis was diagnosed when 10 or more yeast organisms per follicle were observed under direct microscopic examination.

Topical or systemic antifungal treatment was chosen based on the symptom severity (area of the lesion and the number of eruptions) and the patient’s own preferences, and the use or non-use of drugs contraindicated for concomitant administration with itraconazole (ITCZ). This information was collected through a detailed interview process. The two drugs were not used concurrently in any of our subjects. As topical antifungal treatment, patients received simple application of 2% ketoconazole (KCZ) cream twice daily. As systemic antifungal treatment, patients orally took ITCZ 100 mg once daily. Treatment was given until papules flattened, and patients with flattened papules were considered to have “improved” and the treatment to have been “effective.” Pictures were taken of the lesions before and after the treatment.

Results

There were 44 patients (35 men, 9 women) with a mean age of 36 ± 12 years (range, 15-60 years). The mean disease period was 25 ± 15 days (9-56 days). The lesions were located in the frontal portion of the chest in 60% of the patients (chest, 60%; neck, 10%; back, 20%; extensor side of the upper arm, 5%; others, 5%). Approximately 80% of all patients had complained of a mild itching sensation. The most common time of onset was summer (April to August), reported by 75% of all patients. Nine patients (20.5%) had an underlying disease, eight (18.2%) had a history of topical steroid treatment for underlying diseases such as atopic dermatitis, and one was receiving oral steroids for adult Still’s disease.

For treatment, 37 patients received topical application of 2% KCZ cream, and the mean time required for improvement was 27 ± 16 days (9-56 days). Seven patients were given oral ITCZ 100 mg; the mean time required for rash improvement was 14 ± 4 days (9-21 days).

Since the papules disappeared or flattened in all patients, they were considered to have “improved” and “responded to treatment.”Fig. 1, 2 show the courses of three patients who received treatment. Fig. 3 presents direct microscopic images. During the treatment period, no adverse reactions clearly associated with the medications were noted in any of the patients receiving a topical or systemic antifungal agent.

Discussion

The genus Malassezia includes fungi most commonly present on the skin surface. In order to accurately diagnose Malassezia folliculitis, it is important to proactively perform direct microscopic examination in patients suspected to have this disease. Since Malassezia is present in the hair follicle infundibulum, it is critical to sufficiently collect the contents of the papule or pustule containing sebum at the time of microscopic examination. After appropriate staining, numerous Malassezia yeasts are often observed at oil-rich sites.

Malassezia folliculitis, which is occasionally encountered in daily medical practice, is rarely diagnosed correctly. Thus, the actual situation of this disease has not been adequately elucidated. It is usually misdiagnosed as intractable acne or eczema in many patients, resulting in inappropriate treatment. Among approximately 350 patients with acneiform eruptions, the 44 described herein were Malassezia yeast-positive, yielding a correct diagnosis of Malassezia folliculitis.
There are no internationally approved guidelines for treating Malassezia folliculitis at present. In 2015, Hald et al. summarized Malassezia-related skin diseases and reported that systemic antifungal treatment is probably more effective than topical therapy, but recommended that the two be combined\(^7\). As to approaches other than systemic and topical antifungal treatments, Lee et al. reported photodynamic therapy for treatment-resistant Malassezia folliculitis, but their study had a small sample size and further research is needed in this area\(^6\).

In this study, clinical symptoms improved within one month in all patients that received the topical antifungal agent solely. Although it requires

![Fig. 1](image1.png)

**Fig. 1.** a: Twenty days after oral administration of prednisolone for adult Still's disease, a 26-year-old man presented with numerous red papules and pustules, the size of half a grain of rice, and corresponding to follicles all over the frontal portion of the chest. He had mild associated pruritus. b: Eighteen days after topical therapy with KTCZ. Although he was still taking oral prednisolone at 25 mg, his papules showed a flattening trend. The papules had mostly disappeared 28 days after topical therapy, and the patient was thus considered to have "improved".

![Fig. 2](image2.png)

**Fig. 2.** a: A 31-year-old woman presented with numerous red papules, the size of half a grain of rice, and corresponding to follicles on the extensor side of the upper arm. She had atopic dermatitis as an underlying disease. She visited our hospital as there was no improvement with treatment for eczema at another clinic. b: Twenty days after topical therapy with KCZ. Since the papules had mostly disappeared, she was considered to have "improved".

![Fig. 3](image3.png)

**Fig. 3.** Direct microscopic examination (acidic methylene blue staining; scale bar, 50 μm). Multiple yeasts with unipolar budding and stained violet can be seen in a cluster.
longer time for improvement by topical treatment in comparison with systemic therapy, topical antifungal therapy is a safe and beneficial treatment for Malassezia folliculitis.

Conflict of Interest

All authors declare no conflict of interest.

References