

Introduction

Psoriasis is a common skin disorder with a worldwide distribution. Whilst considerable advances have been made in the management of this disease in recent years, there is no cure, and no simple, safe and invariably effective treatment.

Surely one of the most unusual alternative treatments is the so-called “**Doctor Fish of Kangal**” in the Central Anatolia region of Turkey. This treatment was first mentioned in The Lancet in 1989¹ but the details of the treatment were published only recently by Özcelik et al.² Two different types of fish live in the pools of the Kangal hot spring: *Cyprinion macrostomus* and *Garra rufa* (Cyprinidae), with the latter regarded as the main therapeutic. *Garra rufa* normally feeds on phyto- and zooplankton. However, in the hot pools of Kangal, where plankton is scarce, these fish feed on the skin scales of bathers, reportedly reducing illnesses such as psoriasis and atopic dermatitis.² Whether this remarkable treatment is also effective outside of the Kangal hot spring in Turkey is unknown.

In this retrospective study, we set out to evaluate the efficacy and safety of ichthyotherapy when used in combination with short term UVA radiation in patients with psoriasis vulgaris in an outpatient treatment facility.

Patients & Methods

Patients. We retrospectively analysed 67 patients diagnosed with psoriasis who underwent 3 weeks of ichthyotherapy combined with a short course of UVA sunbed treatment at an outpatient treatment facility between 2002 and 2004.

Treatment regimen. Treatment lasted three weeks. A **daily two hour “fish bath”** (Fig. 1) was taken in a bath tub at a comfortably warm temperature (36-37°C). Patients with no contraindication to UV exposure used a commercially available UVA stand-up rapid-tan facility after each bath session according to skin type. After UV exposure, the patients applied a generic skin lotion containing glycerine, *Butyrospermum parkii* (Shea butter) and *Aloe vera* extract.



Figure 1 Patient sitting in standard treatment tub during therapy with the Kangal fish *Garra rufa*.

Treatment tubs had a capacity of approx. 1000 litres. Between 250 to 350 fish were used, depending on the size and severity of the skin lesions. The water in the tubs was constantly filtered and sterilized by a filter pump and a UVC water sterilisation device and was simultaneously enriched with oxygen. The water was exchanged completely 3 to 4 times a day. A thermostat was used to maintain a water temperature around 36°C. Water samples were tested regularly to rule out any risk for potential zoonotic infections. Each patient was allocated to a single bathing tub for the duration of the three-week treatment.

Clinical assessment. Primary efficacy outcome measure was the overall total reduction in **Psoriasis area severity index (PASI)** score and the proportion of patients

with 50% and 75% improvement in PASI score (**PASI-50** and **PASI-75**) at week 3, relative to baseline. Additionally, response to treatment was defined according to the rate of improvement in PASI score, as follows: complete response, more than 95% improvement; good or marked, 75% to 94%; moderate, 50% to 74%; slight, 25% to 49%, and none, less than 25%.

Patient-reported outcomes were evaluated by a short custom questionnaire immediately after the three-week course of treatment and by a follow-up questionnaire sent to all patients after treatment to assess the duration of remission, the number of different treatment regimens prior to ichthyotherapy, the severity of a possible relapse and the personal satisfaction with ichthyotherapy when compared to previous treatments.

Safety and tolerability of the therapy were evaluated by reviewing adverse events, vital signs and a weekly physical examination.

Statistical analyses: comparison of mean PASI score before and after treatment (Wilcoxon signed rank test for paired

comparison).

Results

Patients' Characteristics Sixty-seven patients, 39 male and 28 female, were included in this retrospective study. All 67 patients completed the three-week treatment. Mean Age 41.01 years, 95% CI 37.51, 44.52). The mean duration of psoriasis at baseline was 13.9 years (95% CI 11.6, 16.21).

Physician-Assessed outcomes. At the end of the three-week treatment course, 31 of the 67 patients (46.3%) achieved PASI-75 and 30 other patients (44.8%) achieved PASI-50. **Overall there was a 71,71% reduction in PASI score compared to baseline (p<0.0001) (Fig. 2).**

Response to treatment was complete in 3 patients (4.5%), marked in 29 (43.3%), moderate in 29 (43.3%), and slight in 6 (8.9%). No patient failed to respond at all.

Patient-Reported outcomes. In the questionnaire given immediately after the three weeks of treatment, patients reported substantial satisfaction with the treatment

Table 1 Answers to the short custom questionnaire immediately after three weeks of therapy (n=number of completed questions). *12 patients (18.2%) stated that they had no psychological problems prior to treatment.

	extremely	considerable	a little	not at all
How much did your skin condition improve after the treatment considering...				
itching? (n=63)	46 (73.0%)	15 (23.8%)	2 (3.2%)	0
pain? (n=54)	48 (88.9%)	6 (11.1)	0	0
skin tension? (n=62)	51 (82.3%)	11 (17.7%)	0	0
induration? (n=64)	49 (76.6%)	14 (21.9%)	1 (1.6%)	0
scaling? (n=66)	56 (84.8%)	9 (13.6%)	1 (1.5%)	0
psychological problems?* (n=66)	31 (47.0%)	18 (27.3%)	4 (6.1%)	1 (1.5%)
Have you attained your treatment goal? (n=66)	44 (66.7%)	21 (31.8%)	1 (1.5%)	0
	yes	probably yes	probably no	no
Would you use this kind of therapy again? (n=66)	59 (89.4%)	6 (9.1%)	1 (1.5%)	0

(Table 1).

Of the 67 follow-up questionnaires sent to the patients in March 2005, 40 questionnaires were returned, giving a response rate of 60%. The reported **mean remission period was 8.58 months** (95% CI 6.05, 11.11) with two patients (5.1%) still in remission at the time the questionnaire was received.

The mean number of previously used o-

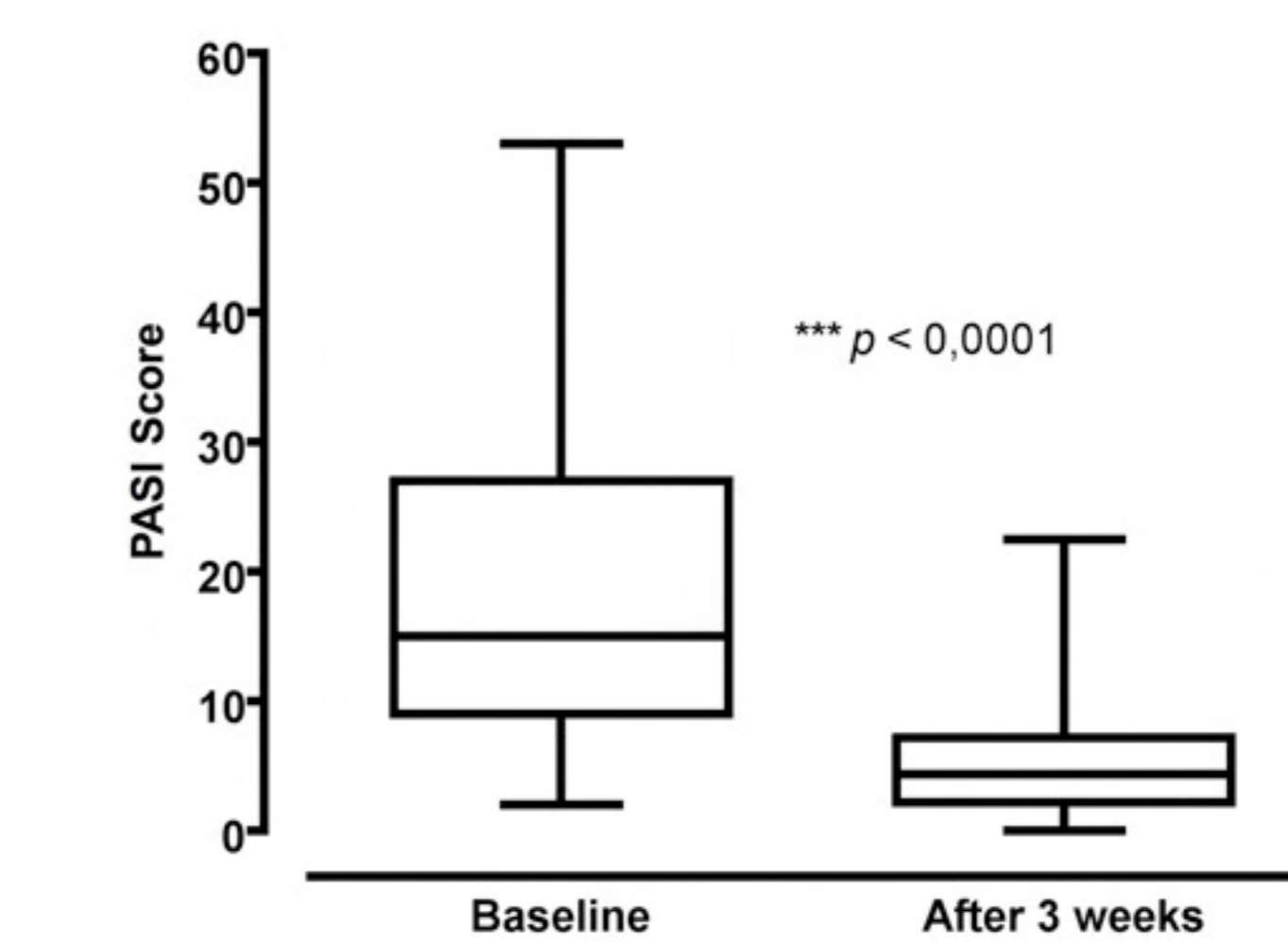


Figure 2 Box plot of PASI scores before and after treatment. Horizontal lines show 75th percentile, median, and 25th percentile, whiskers indicate range.

ther therapies was 5 ± 3 (\pm SD) (95% CI 4.02, 5.93). When asked to compare their treatment results to all previously used therapies, 87.5% of patients reported a more favourable outcome with ichthyotherapy. 65.1% stated that after the relapse

Table 2 Results of the mailed follow-up questionnaire (n= number of completed questions). *2 patients (5.1%) still in remission at the time the questionnaire was received.

	more	equally	less
Compared to other tried treatments this kind of therapy helped me... (n=40)	35 (87.5%)	4 (10%)	1 (2.5%)
If a relapse occurred, how severe were the symptoms compared to baseline?* (n=39)	3 (7.7%)	10 (25.6%)	24 (61.5%)

their symptoms were less severe than compared to baseline (Table 2).

Safety evaluation, Side effects. No severe side effects were recorded during the treatment period.

Conclusion

This retrospective study indicates that **ichthyotherapy used in combination with short term UVA radiation is an effective and safe treatment for psoriasis vulgaris.** These findings are further supported by the results of the questionnaire completed by the patients immediately after treatment and after follow-up (Tables 1 & 2).

Most of the patients were more satisfied with ichthyotherapy than with any other previously tried treatment, which might be explained, by the rather long reported mean remission period of 8.6 months and the lack of side effects.

In summary, the observed benefit, along with the favourable safety profile, suggests that ichthyotherapy combined with a short course UVA treatment could provide a viable treatment option for patients with psoriasis.

However, the present study is limited by the relatively small number of patients treated and by lack of a control group. Therefore prospective controlled trials are now warranted to validate efficacy of this unusual treatment modality.

References

- Warwick D, Warwick J. The doctor fish - a cure for psoriasis? *Lancet* 1989; 335:1093-94.
- Özcelik S, Polat HH, Akyol M, Yalcin AN. Kangal Hot Spring with Fish and Psoriasis Treatment. *J Dermatol* 2000. 27:386-90.

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Figures 3-8: Six patients before and after a three week combined treatment with ichthyotherapy and UVA radiation.

