

2292-PROTECTION EFFECT OF MACROPHAGE-REGULATION DRUG FOR ACUTE RADIATION DERMATITIS (ARD): FROM PRECLINICAL PHARMACOLOGY TO REAL-WORLD PROOF-OF-CONCEPT STUDY.

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Introduction

Radiation therapy (RT) is currently one of the main therapies for the treatment of malignant tumors, but approximately 95% of these patients will eventually develop radiation dermatitis with different CTCAE grades within or after treatment course. While dermatitis getting worse, most patients will discontinue RT and lead to cancer progression owing to the poor quality of life. It is urgent to have a good treatment choice for radiation dermatitis. ON101 is a novel macrophage-regulating drug for diabetic foot ulcers (DFUs). With its mechanism by inhibiting pro-inflammatory M1 macrophages and promoting GCSF and CXCL3 to increase M2 macrophages, ON101 has been demonstrated with superior efficacy in wound healing. Since macrophages and inflammation are also involved in radiation dermatitis, in this study, we investigate the therapeutic effect of ON101 on radiation dermatitis from preclinical pharmacology (animal disease model) to real-world application in clinical patients.

Materials and Methods

We used an acute radiation dermatitis (ARD) mice model to evaluate the effect of ON101 cream on radiation dermatitis. Radio-dermatitis severity scoring was based on toxicity grades the principal study investigator assigned to the study drug application site (SDAS) and the adjacent untreated control site of every mouse that each dose of 6 Gy daily for 5 days (Day 0 to Day 4) and dermatitis evaluation (every 7 days) until 28 days. ON101 cream was also applied on the radiative ulcer of tongue cancer patient following animal study.

Results

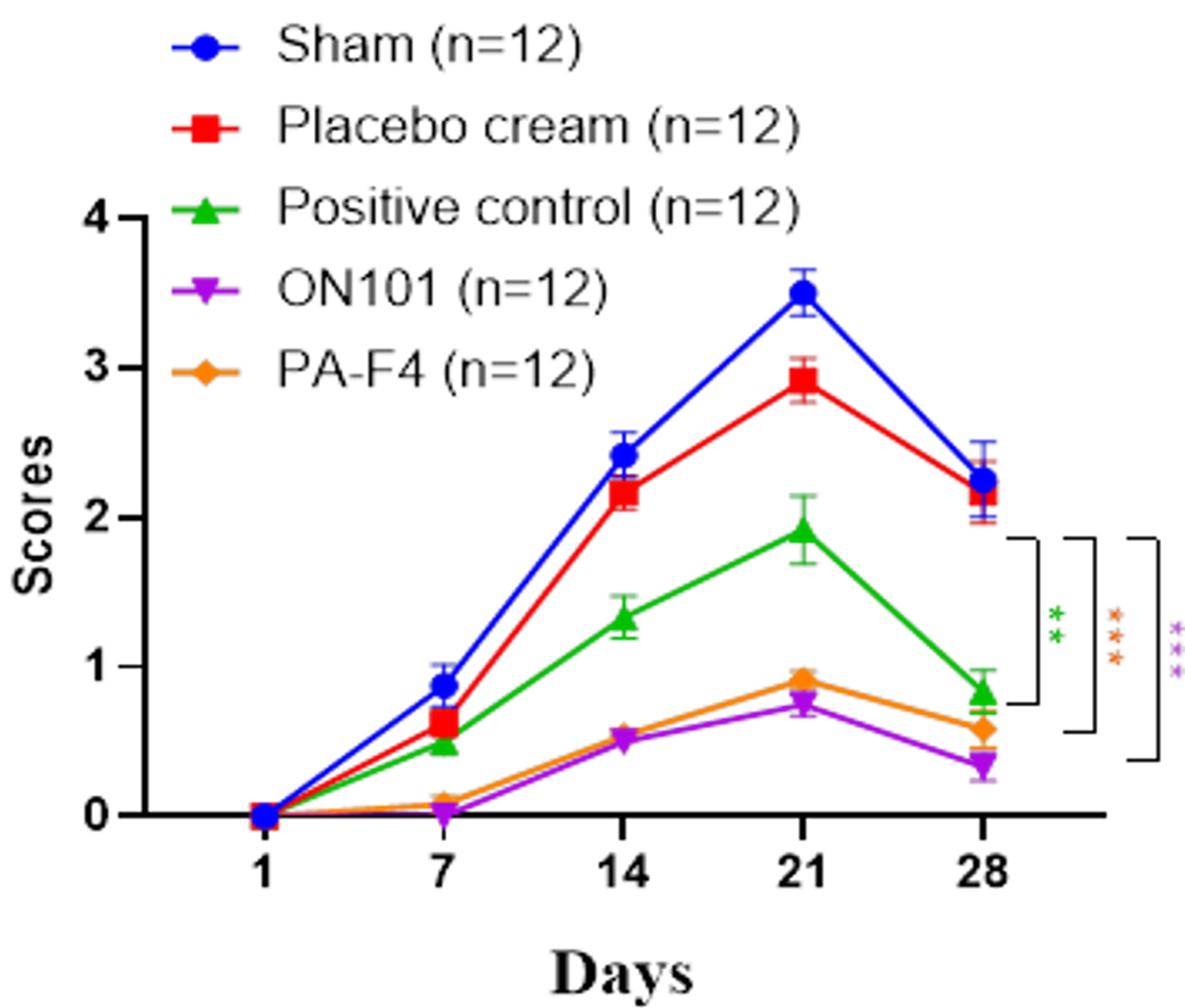
In the ARD mice, ON101 showed significant therapeutic effects in the prevention and alleviation of radiation dermatitis compared with the placebo and steroid groups. In clinical case study, a 60-year-old male patient presented with a radiative ulcer on neck for 2 months. We start to apply ON101 cream for wound care after failure of other wound medications. The ulcer has been healed eventually after 10-week care with ON101 cream.

Conclusion

This is the first time to demonstrate the prevention and alleviation of radiation dermatitis of ON101 in the ARD mice model. Furthermore, a real-world case also provides outstanding clinical outcome of ON101 for the RT treatment in radiative ulcer patients. From pre-clinical to real-world case, ON101 cream provides a promising alternative to radiation dermatitis patients and is worthy of further research.

Figure 1

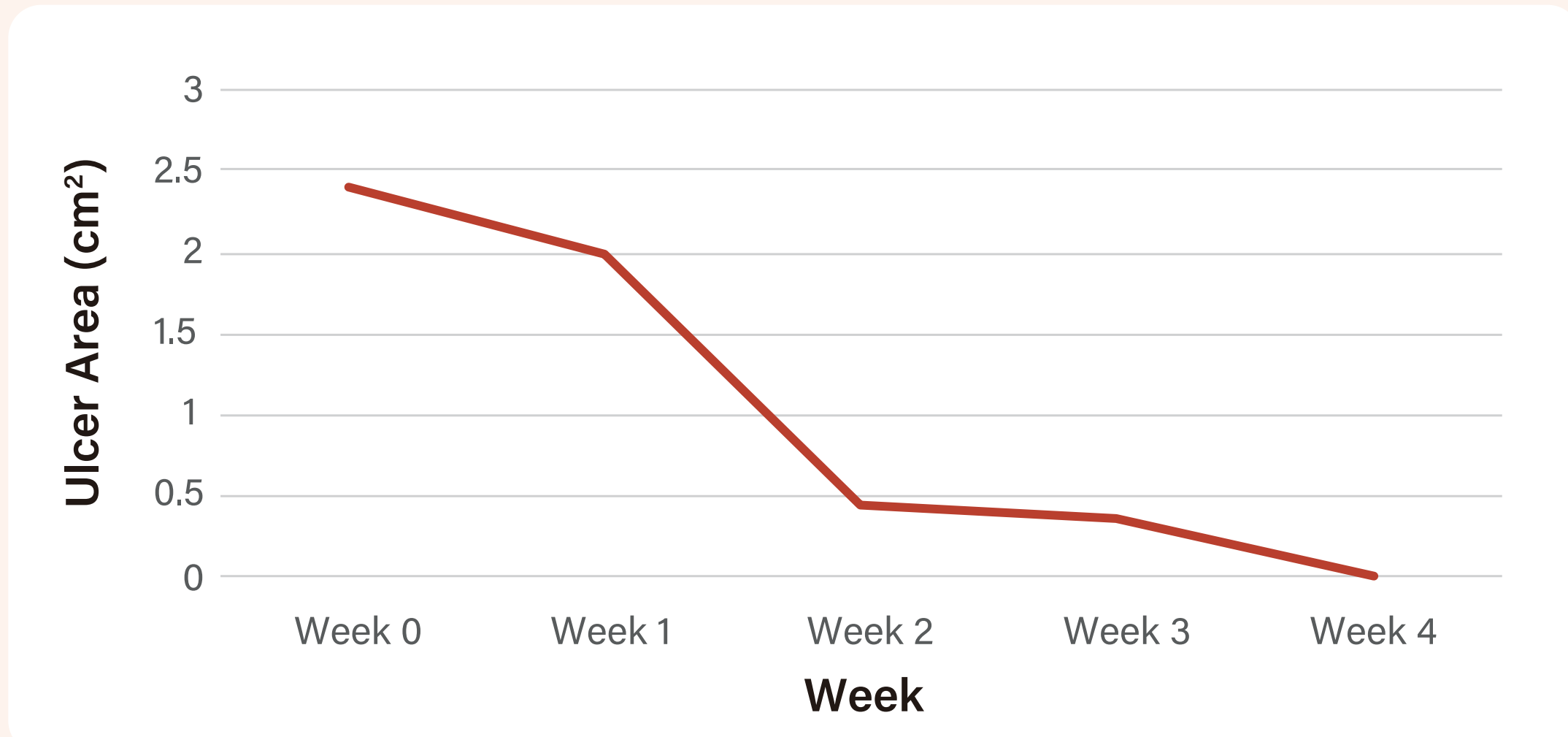
The prevention and treatment effect of ON101 in ARD mice



Topical application of ON101 or PA-F4 cream improved radio-dermatitis severity from 3.5 to 1 score in the fractionated radiation-induced dermatitis mice model. Steroid was used as the positive control and each group had 12 mice.

Figure 2 Clinically proven efficacy for ARD treatment

General Data: 60 y/o male
Cancer Type: Right tongue squamous cell carcinoma stage IVA
Cancer Regimens: Chemoradiotherapy
▪ Chemotherapy: Dose of 40 mg/m² weekly for 6 cycles
▪ Radiotherapy: Total 6,600 cGy given in 200 cGy each fraction over fifty days
Physical Data:
▪ Ulcer location: Right neck
▪ Ulcer size: 2.4 cm²
▪ CTCAE stage: Grade 4



A 60-year-old man who was diagnosed as right tongue squamous cell carcinoma, stage IVA. He had then started adjuvant concurrent chemoradiotherapy for neck metastasis. However, grade 1 radiation dermatitis was observed after 4200 cGy of radiotherapy. Right neck enhancing nodular lesion. The patient received right neck mass surgical excision, pathologically proved as suppurative granulomatous inflammation. Postoperatively, progressive wound erosion with discharge was noticed despite oral and topical antibiotics use for two months. The patient was due to right neck unhealing radiative ulcer. We started ON101 cream topical treatment in February 2023 for ten weeks. The ulcerative wound showed good response with significantly downsizing and was completely healed in ten-week management.

