Off-Label Drug Uses

Oxandrolone: Pressure (Decubitus) Ulcers in Spinal Cord Injury

Joyce A. Generali, RPh, MS, FASHP (Editor),* and Dennis J. Cada, PharmD, FASHP, FASCP†

This *Hospital Pharmacy* feature is extracted from *Off-Label Drug Facts*, a publication available from Wolters Kluwer Health. *Off-Label Drug Facts* is a practitioner-oriented resource for information about specific drug uses that are unapproved by the US Food and Drug Administration. This new guide to the literature enables the health care professional or clinician to quickly identify published studies on off-label uses and determine if a specific use is rational in a patient care scenario. References direct the reader to the full literature for more comprehensive information before patient care decisions are made. Direct questions or comments regarding *Off-Label Drug Uses* to jgeneral@ku.edu.

BACKGROUND

Pressure ulcers, also termed *decubitus ulcers*, can develop any time there is sustained pressure against the skin. Typically, a local inflammatory reaction occurs, including skin changes, and increases the risk of bacterial infection or systemic disease. The severity of pressure ulcers is classified by a grading system that evaluates the degree of involvement (eg, erythema, skin erosion, skin loss, etc) and the amount of tissue affected. Risk factors include incontinence, hypoalbuminemia, diabetes, smoking, and alcoholism. Because pressure ulcers are associated with significant morbidity, particularly in the elderly and disabled, its prevention and management are paramount in patient care.¹ Weight loss and subsequent protein depletion have been associated with poor wound healing. Thus, anabolic steroids have been suggested as possible agents to promote both weight gain and wound healing.²

PATIENT POPULATION

Patients with spinal cord injury (SCI) with stage III to IV pressure ulcers.

DOSAGE AND DURATION

Oral oxandrolone administered as 20 mg daily until healing or up to 24 weeks to 12 months. In a small case series report, oxandrolone (20 mg) was administered with glutamine (20 g) dissolved in orange juice.

RESULTS

Oral oxandrolone in the management of severe pressure ulcers in SCI inpatients has been studied in

controlled and noncontrolled settings enrolling fewer than 250 patients, demonstrating conflicting results. Current evidence-based summaries for the prevention and treatment of pressure ulcers do not mention the use of anabolic steroids.¹

Evidence-Based Review

An evidence-based review of the literature regarding the prevention and treatment of pressure ulcers evaluated various physical, surgical, and pharmacological modalities. Level I evidence (eg, randomized controlled trials or systematic reviews) supporting prevention and treatment methods included the use of specialized support surface mattresses and certain vitamins and minerals (eg, ascorbic acid). Level II evidence (eg, cohort studies, outcomes research) supported the use of wound cleansers, enteral and parenteral feeding, and honey. Other modalities supported by noncontrolled evidence included various types of surgical debridement and flap closure. Repositioning has been noted in best practice guidelines. The use of anabolic steroids was not addressed in this review.¹

Controlled Trials

In a placebo-controlled, parallel group study, 212 Veterans Administration inpatients with SCI and stage III or IV (severe) pressure ulcers were randomized to receive either oral oxandrolone (20 mg daily; n=108) or placebo (n=104) until the ulcer was healed or 24 weeks. The primary outcome was healed target pressure ulcers (TPUs); secondary outcome was the percentage of TPUs that remained healed at the 8-week follow-up.

*Editor-in-Chief, *Hospital Pharmacy*, and Clinical Professor, Emeritus, Department of Pharmacy Practice, University of Kansas, School of Pharmacy, Kansas City/Lawrence, Kansas, e-mail: jgeneral@ku.edu; †Founder and Contributing Editor, *The Formulary*, and Editor, *Off-Label Drug Facts*, e-mail: Dennis.Cada@wolterskluwer.com.

Approximately one-third of the patients did not complete the study, and the study was terminated after a futility analysis indicated that there was a low probability of detecting a significant difference between the 2 groups. There was no significant difference between the oxandrolone and placebo groups for healed TPUs (24.1% vs 29.8%; $P = .40$). At the 8-week follow-up, maintained healed TPUs were 16.7% and 15.4%, respectively ($P = .70$). Oxandrolone offered no therapeutic benefit over placebo for initial percentage TPU healing and at 8-week follow-up. The selection of severe wounds may have reduced treatment response.²

Case Series

In a case series report, 9 SCI inpatients (mean age, 50 years; range, 24-73 years) with chronic nonhealing TPUs received oxandrolone (20 mg daily) and glutamine (20 g daily dissolved in orange juice) for 1 to 12 months. Eight patients had stage IV TPUs, and 1 patient had stage III TPUs. Approximately 89% of the patients experienced complete healing: 3 after 3 months, 2 after 4 months, 1 after 6 months, and 2 after 12 months of treatment.

SAFETY

This is a limited safety profile. Refer to package labeling for complete prescribing information (eg, warnings/precautions, adverse reactions, drug interactions).

In a large controlled trial, liver enzyme elevation occurred in 32.4% of oxandrolone patients compared to 2.9% of those receiving placebo ($P < .001$).² Mild liver enzyme elevations were also noted in a small case series report of 9 patients.³

THERAPY CONSIDERATIONS

The use of oxandrolone in the management of severe pressure ulcers has produced conflicting results, demonstrating favorable effects in a small case series but faring no better than placebo in a large controlled trial. Further controlled trials are needed before this agent's role in the management of pressure ulcers is established.

REFERENCES

1. Levine SM, Sinno S, Levine JP, Saadeh PB. Current thoughts for the prevention and treatment of pressure ulcers. *Ann Surg.* 2013;257(4):603-608.
2. Bauman WA, Spungen AM, Collins JF, et al. The effect of oxandrolone on the healing of chronic pressure ulcers in persons with spinal cord injury. *Ann Intern Med.* 2013;158:718-726.
3. Spungen AM, Koehler KM, Modeste-Duncan R, Rasul M, Cytryn AS, Bauman WA. Nine clinical cases of nonhealing pressure ulcers in patients with spinal cord injury treated with an anabolic agent: A therapeutic trial. *Adv Skin Wound Care.* 2001;14:139-144. ■