

# Carvedilol for the treatment of red scrotum syndrome



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**Key words:** carvedilol;  $\beta$ -blocker; red scrotum syndrome.

## INTRODUCTION

The male genitalia can be affected by many common dermatologic diseases such as psoriasis, contact dermatitis, and fungal infections.<sup>1</sup> When appropriate treatment of these diseases fails, other rare or underdiagnosed etiologies should be considered, such as red scrotum syndrome, characterized by persistent erythema of the anterior half of the scrotum associated with hyperalgesia and burning sensation.<sup>1,2</sup> Several treatment modalities have been used with minor efficacy.<sup>3,4</sup> We present 2 cases of red scrotum syndrome in which  $\beta$ -blockers were used successfully.

## CASE REPORTS

### Patient 1

A 56-year-old healthy man presented to our dermatologic department with burning sensation and redness of the scrotum for the last 18 months. He was treated previously with systemic antifungals and topical corticosteroids with no improvement. On physical examination, the scrotum was erythematous without scaling (Fig 1). Results of investigations, including patch test and cultures (to rule out contact dermatitis and fungal or bacterial infection, respectively), were all normal. The diagnosis of red scrotum syndrome was made. Topical calcineurin inhibitors and doxycycline did not improve the patient's symptoms. Therefore, carvedilol, 6.25 mg once daily, was initiated. A baseline electrocardiogram was done to rule out bradyarrhythmias. Heart rate and blood pressure were monitored. Complete remission was noted after 4 weeks, and the treatment was stopped. No side effects were noted. The patient was then seen 2, 4, and 6 months after cessation of treatment and was symptom free.

From the Department of Dermatology, Holy Spirit University of Kaslik.

Funding sources: None.

Conflicts of interest: None declared.

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### Patient 2

A 65-year-old man presented with erythema and hyperalgesia of the scrotum. His medical history was significant for dyslipidemia for which he took simvastatin.

Topical corticosteroids given for his current complaint did not improve his condition. On examination, erythema with sharp borders was noted on the scrotum (Fig 2). Investigations to rule out contact dermatitis and fungal or bacterial infection came back negative. The diagnosis of red scrotum syndrome was made, and the patient received conventional treatment without any improvement. Baseline electrocardiogram was done and carvedilol, 6.25 mg once daily, was started. His condition improved after 2 weeks, and no side effects were noted. Carvedilol was stopped after 1 month of treatment. Follow-up examinations were made 2, 4, and 6 months after cessation of treatment, and the patient was satisfied without any complaints.

## DISCUSSION

Red scrotum syndrome is an underdiagnosed skin disorder affecting elderly men with a history of prolonged application of topical corticosteroids.<sup>2,3</sup> The pathophysiology is unknown, but different hypotheses have been suggested: Prevost<sup>5</sup> concluded in 2007 that red scrotum syndrome is a variant of localized erythromelalgia. In 2011, Wollina<sup>1</sup> added that the burning sensation and the hyperalgesia may be a result of neurogenic inflammation and therefore responded to gabapentin.<sup>1,5</sup> In 2013, Narang et al<sup>6</sup> argued that the erythema may be caused by localized vasodilation and concluded that the red scrotum syndrome may resemble rosacea. Histologically, there are no specific findings

JAAD Case Reports 2017;3:464-6.  
2352-5126

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<http://dx.doi.org/10.1016/j.jidcr.2017.06.021>



**Fig 1.** Red scrotum syndrome. Erythema of the scrotum without scaling in a 56-year-old man.



**Fig 2.** Red scrotum syndrome. Sharp border between the erythematous skin and the normal scrotum skin in a 65-year-old male patient.

other than mild telangiectasia without prominent inflammation.<sup>2</sup>

Red scrotum syndrome is a diagnosis of exclusion, and other etiologies should be ruled out first, such as atopic dermatitis, contact dermatitis, psoriasis, fungal or bacterial infections, ichthyosis, syphilis, Langerhans cell histiocytosis.<sup>1,4</sup> The diagnosis of red scrotum

syndrome is confirmed when confronted with persistent erythema of the scrotum with pain and burning sensation and a lack of a response to topical treatments.<sup>6</sup>

The treatment of red scrotum syndrome is challenging.<sup>1</sup> So far, no drugs have yielded consistent efficacy, and symptoms need 4 to 18 months to resolve.<sup>3,4,7</sup> The management relies on the discontinuation of corticosteroids. In some recent case reports, new treatment modalities have been used: doxycycline alone or in combination with gabapentin or pregabalin,<sup>3,4,7</sup> gabapentin,<sup>1</sup> pregabalin,<sup>4</sup> and topical calcineurin inhibitors.<sup>1</sup>

In our patients, the common dermatoses were ruled out and both cases filled the diagnosis criteria of red scrotum syndrome. The patients were treated initially with doxycycline and topical calcineurin inhibitors as described in the literature, without clinical improvement. Data are emerging lately about the potential usefulness of  $\beta$ -blockers in controlling facial flushing and rosacea.<sup>8-10</sup> Because red scrotum syndrome may resemble rosacea,<sup>6</sup> we decided to switch to low-dose carvedilol. Both patients dramatically improved within 2 to 4 weeks. The mechanism behind this finding may be the  $\beta$ 2-adrenergic blocking effects of the  $\beta$ -blockers leading to vasoconstriction of the cutaneous arteries. Carvedilol is a nonselective  $\beta$ -adrenergic blocking agent with antioxidant and anti-inflammatory effects.<sup>10</sup> It is well tolerated in elderly patients<sup>9</sup> partially, with hypotension and bradycardia being rare side effects at high dosage.<sup>9</sup>

## CONCLUSION

To our knowledge, this is the first report of its kind suggesting that carvedilol is a successful therapeutic option in managing red scrotum syndrome. Larger randomized trials are needed to confirm these findings.

## REFERENCES

1. Wollina U. Red scrotum syndrome. *J Dermatol Case Rep.* 2011; 5(3):38-41.
2. Wollina U. Three orphans one should know: red scalp, red ear and red scrotum syndrome. *J Eur Acad Dermatol Venereol.* 2016;30(11):e169-e170.
3. Abbas O, Kibbi AG, Chedraoui A, Ghosn S. Red scrotum syndrome: successful treatment with oral doxycycline. *J Dermatolog Treat.* 2008;19(6):1-2.
4. Miller J, Leicht S. Pregabalin in the treatment of red scrotum syndrome: a report of two cases. *Dermatol Ther.* 2016;29(4): 244-248.
5. Prevost N, English JC 3rd. Case reports: red scrotal syndrome: a localized phenotypical expression of erythromelalgia. *J Drugs Dermatol.* 2007;6(9):935-936.
6. Narang T, Kumaran MS, Dogra S, Saikia UN, Kumar B. Red scrotum syndrome: idiopathic neurovascular phenomenon or steroid addiction? *Sex Health* 2013;10(5):452-455.

7. Byun JW, Hong WK, Han SH, et al. Red scrotum syndrome: Successful treatment with oral doxycycline. *Int J Dermatol*. 2012;51(3):362-363.
8. Hsu C-C, Lee JY-Y. Carvedilol for the treatment of refractory facial flushing and persistent erythema of rosacea. *Arch Dermatol*. 2011;147(11):1258-1260.
9. Layton A, Thiboutot D. Emerging therapies in rosacea. *J Am Acad Dermatol*. 2013;69(6 SUPPL 1):S57-S65.
10. Park JM, Mun JH, Song M, et al. Propranolol, doxycycline and combination therapy for the treatment of rosacea. *J Dermatol*. 2015;42(1):64-69.