



## Case Report

# Metoprolol Induced Dupuytren's Contracture

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## Abstract

*Metoprolol is a widely used beta-adrenergic blocker that is commonly prescribed for a variety of cardiovascular diseases and hypertension. Various drugs are known to cause musculoskeletal symptoms, such as Dupuytren's contracture, arthralgias, myalgias, Peyronie's disease, drug-induced lupus and serum sickness. Although beta blockers also have a noted side effect of Dupuytren's contracture, as listed on the product label, there is lack of literature and awareness that this class of medications can cause Dupuytren's contracture<sup>2</sup>. We are reporting a case of male, who was taking metoprolol for hypertension, developed Dupuytren's contracture after 2 years of using it.*

**Keyword:** Dupuytren's contracture, Metoprolol, Beta-blocker, Peyronie's disease.

## Introduction

Dupuytren's disease (DD) is a progressive fibro-proliferative disorder resulting in abnormal scar-like tissue in the palmar fascia leading to irreversible, permanent, and progressive contracture of the involved digits. It is named after Dr. Baron Guillaume Dupuytren, who was the first to operate on the condition and described it as "Retraction of the fingers, and particularly that of the ring-finger, has been observed for many years, but it is only very lately that the cause of this deformity has been investigated with success." Its overall incidence in Northern Europe is around 8%, rising to about 15% in those over 65 years. The incidence increases with concurrent patient clinical conditions or factors such as diabetes,

smoking, chronic alcoholism, seizures, and infection. It is commonly bilateral but usually more severe in one hand, and most frequently involves the ring finger, followed by the little finger. "Dupuytren-like" fibrotic tissue can occur on the dorsum of the hand over the knuckles (Garrod's pads), feet (Lederhose's disease), and penis (Peyronie's disease). There are many grading systems for the severity of Dupuytren's contracture. It is also a manifestation of metabolic disease like diabetes mellitus<sup>3</sup>.

## Case Report

A 55-year-old male diagnosed with systemic hypertension, was commenced on oral metoprolol sustained release 50 mg once a day. At routine

review, it was divulged that he had developed as fibrotic bands representing early Dupuytren's contracture. The development of this conditions had occurred 2 years after starting this treatment with no prior history described. The patient was non alcoholic, non smoker, and non diabetic, and took no other regular medications that may have contributed towards the development of these conditions. Specifically he was not on anticonvulsants and had no history of immunosuppression. Dupuytren's contracture interfering significantly with his quality of life. Beta-blocker preparation was therefore stopped, and the patient was prescribed amlodipine 5 mg and was referred to a hand surgeon, though noactive intervention was subsequently sought. Fig. 1



**Fig. 1**

### Discussion

Beta blockers are increasingly prescribed medications for cardiovascular benefit and hypertension<sup>4</sup>. Therefore, it is imperative physicians be aware of the possible side effects. From a musculoskeletal perspective, a wide array of symptoms have occurred, from arthralgias and myalgias to, less often, a systemic autoimmune phenomenon. Such an example is drug-induced lupus erythematosus from practolol, a previously used beta blocker. The pathogenesis of contracture is unclear at this time. In the case presented above, the patient developed symptoms of contracture that were out of proportion to the physical examination findings.. Given the subtle findings and insidious onset of symptoms, there was not

substantial evidence to implicate metoprolol as the culprit. It is likely that beta blockers are under-reported as the cause of contracture in patients due to lack of knowledge regarding the side effect, as well as possible confounding factors, such as electrolyte abnormalities, in patients who have these complaints. Thus, it is important to consider a trial off of beta blockers in a patient with contracture prior to pursuing further evaluation.

The use of beta-blockers, has been strongly associated with fibrosing disease. There are numerous case reports linking beta-blockers to retroperitoneal fibrosis<sup>5</sup>. Additionally, beta-blockers have also been reported to contribute to the development of Peyronie's disease. The mechanism of developing fibrosing disease secondary to beta-blockers is incompletely understood, though putative mechanisms do exist. It has been shown that endogenous beta adrenergic agonists inhibit fibrosis through reduced fibroblast proliferation. This process is inhibited by exogenous beta-blocking preparations, which leads to fibrosis of tissue and replacement of elastic tissue with inelastic collagen fibers. This case report adds to the growing body of evidence that beta-blockers are implicated in the development of fibrotic disease processes such as Peyronie's disease, Dupuytren's contracture, and retroperitoneal fibrosis. It is prudent that patients are counselled thoroughly regarding possible systemic side effects of beta-blockers prior to commencement of treatment. Other drug causing dupuytren's contracture are hydralazine, minocycline, fluoroquinolones and, recently, the dipeptidyl peptidase 4 (DPP-4) inhibitor class of medications. Other side effect of b-blocker are bradycardia, worsening of copd, prinzmetal agina, carbohydrate intolerance, tiredness, reduced exercise capacity, cold hand and feet, g.i.t upset, lack of drive, forgetfulness, impotence in male etc.

### Conclusion

We suspect that metoprolol induced Dupuytren's contracture may be under-recognized and under-

reported. Patients may frequently fail to acknowledge this adverse effect believing that they are just normal things. Similarly, healthcare providers can also fail to recognize this Dupuytren's contracture with this medication. Clinicians must maintain diligent surveillance when managing patients receiving this drug. Whilst uncommon, beta-blockers are known to be associated with such fibrotic conditions and have been reported with the use of oral metoprolol. This case serves to increase the current understanding of this association.

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