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# Hydroxychloroquine used to treat diabetic hand syndrome

## ABSTRACT

Increased incidence of musculoskeletal disorders has been linked with diabetes mellitus (DM). Focus of anti-diabetic therapy is prominently towards controlling blood glucose levels along with prevention and management of micro- and macrovascular complications. These complaints often receive less attention and are undertreated. No specific drug treatment has been recommended for the management of musculoskeletal complications of DM. Hydroxychloroquine (HCQ) decreases joint inflammation and pain in rheumatoid arthritis (RA). In India, due to its proven antidiabetic effect, it is officially approved for the management of type 2 diabetes mellitus (T2DM). Due to its anti-inflammatory and antidiabetic effect, it may alter the clinical course of musculoskeletal complications in T2DM patients. We report a case of 55-year-old male patient, diagnosed with T2DM since last 6 years. The patient had bilateral musculoskeletal involvement of upper extremities at the time of presentation. He had difficulty in moving smaller joints of hand, closing of fist and trigger finger, all suggestive of diabetic hand syndrome. Good improvement in joint mobility was observed after initiation of HCQ 400 mg once daily as add-on to existing antidiabetic regimen. HCQ was found to be effective in relieving symptoms of musculoskeletal complications as well as controlling

blood glucose level in our patient. More clinical studies investigating use of HCQ in diabetic musculoskeletal complications are warranted. (Clin Diabetol 2021; 10; 3: 307-309)

**Key words:** type 2 diabetes mellitus, complications, musculoskeletal, hand syndrome, hydroxychloroquine

## Introduction

Much advancement in diabetes care has been achieved in recent times. Currently, diabetes care is not limited to glycemic control alone, but it also involves prevention and management of micro- and macrovascular complications. Despite this progress, many diabetic patients disproportionately suffer from musculoskeletal morbidity. These diabetic complications appear to be common, but they are often under-recognized and undertreated [1]. Barring few exceptions, there is relative paucity of clinical data regarding specific treatment alternatives for musculoskeletal complications of diabetes mellitus (DM). Lack of clear recommended treatment for this noteworthy comorbidity is shocking, and it poses a clinical challenge to provide adequate care to the diabetic patients.

Hydroxychloroquine (HCQ) is an immunomodulatory and anti-inflammatory drug widely used to treat autoimmune conditions like rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) [2]. It was found to be effective in reducing inflammation and pain of arthritis in RA patients [3]. Its antidiabetic effect has been systematically explored in many randomized clinical trials [4]. In India, it has been approved as a third-line drug for type 2 diabetes mellitus (T2DM) patients [2]. Therefore, HCQ may have potential dual utility in controlling blood glucose levels as well as musculoskeletal

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Figure 1. Restricted hand joint movement at the time of presentation

complications of T2DM. Indeed it was found to be effective in resolution of signs and symptoms of shoulder adhesive capsulitis and controlling blood glucose level in T2DM patients in India [5].

## Case presentation

### Presenting concerns

A 55-year-old male patient with 6-year history of T2DM visited outpatient department. The patient had inability to move hand joints involving metacarpophalangeal joints of both hands, inability to close the fist, a trigger finger involving both proximal and distal interphalangeal joints of the ring finger of right hand. Right ring finger demonstrated feature of trigger finger and the patient was unable to perform day to day activities such as holding small objects and writing. Both the hands had limited joint mobility, incomplete closure of the fists and highly tender joint movements, suggesting diabetic hand syndrome. Prayer sign and Hueston tabletop sign were found to be positive. Examination of other joints throughout the body did not revealed any feature indicative of polyarthritis (Fig. 1).

His vital functions were stable. Investigations revealed that the patient was negative for RA factor, anti-cyclic citrullinated peptides (Anti-CCP) antibodies and antinuclear antibody (ANA).

The patient also had notable co-morbidities viz. hypertension, hypothyroidism, dyslipidemia, NAFLD and deficiency of vitamin D-3 and vitamin B-12.

### Therapeutic intervention and treatment

The patient was initiated on hydroxychloroquine sulfate 400 mg once daily on top of existing oral hypoglycaemic agents and concomitant treatment of hypertension, hypothyroidism and dyslipidemia. Non-steroidal

anti-inflammatory drugs (NSAIDs) were also prescribed with advice to be taken for short duration, in case of severe restriction in joint mobility. Supplementation with vitamin B-12 and vitamin-D3 were also initiated.

### Follow-up and outcomes

Marked improvement in the form of reduction in signs and symptoms of joint immobility were observed at the end of one month. The patient was able to move all the fingers without any discomfort as shown in Figure 2. Improvement in trigger finger was also noted, though complete resolution was not observed till writing of this report.

The patient's blood glucose levels were also within the acceptable limits.

## Discussion

Musculoskeletal complications are frequently observed in DM patients. Most common of them are, low back pain, shoulder capsulitis, carpal tunnel syn-



Figure 2. Improvement in hand joint movement after HCQ treatment

drome, Dupuytren contracture, flexor tenosynovitis etc. [1]. Production of advanced glycation end-products, abnormal cross-linking and abnormal deposition of collagen in the connective tissues around the joints are thought to be major pathological features involved in musculoskeletal complications of DM [1].

Unfortunately, comparatively less epidemiological data is available for musculoskeletal complications of DM. Some investigators had tried to estimate its prevalence in DM patients. Discussing these epidemiological features is beyond the scope of this case report, thus we had considered few studies.

Majjad *et al.* [6] in their cross-sectional study of 376 DM patients observed 34.4% patients had musculoskeletal disorders, of which 14.4% had hand disorders. In their study, age > 50 years and dyslipidemia were linked to musculoskeletal disorders. Nearly similar prevalence of musculoskeletal disorders in DM patients was observed by Khan *et al.* [7]. In their analysis, musculoskeletal disorders were present in 37.6% of DM patients (N = 250). They observed it was linked to poor glycemic control.

Musculoskeletal complications of DM restrict physical activity and thus these patients may have increased risk of developing cardiovascular disease and stroke. It may also impair quality of life of DM patients [1]. Surprisingly, there is a lack of clear evidence-based recommendations to treat musculoskeletal complications of DM.

Hydroxychloroquine has been widely used in the management of inflammatory conditions like RA and SLE. It has also been found to possess anti-diabetic, lipid-lowering, anti-platelet and anti-coagulant action [2]. Joshi *et al.* [5] had clearly demonstrated clinical effectiveness of HCQ in controlling symptoms of shoulder adhesive capsulitis and blood glucose levels in 39 Indian T2DM patients. In their study, 37 patients got complete relief from symptom of adhesive capsulitis while 2 patients required other drugs, but none required corticosteroids or surgical intervention. Improvement in sign and symptoms of diabetic hand syndrome in our reported case reiterate that, HCQ may

have potential dual utility in T2DM patients — it may relieve musculoskeletal complications while exerting good glycemic control.

## Conclusions

Effective management of musculoskeletal complications of diabetes can significantly improve quality of life in T2DM patients. Improvement in diabetic hand syndrome in our reported case suggests that, HCQ may be a good therapeutic alternative in T2DM, especially in the subgroup of patients with diabetic musculoskeletal involvement. We recommend further clinical investigations in randomized control trials.

## Conflict of interest

The authors declare no conflict of interest.

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