



“TRIGGER FINGER: A MUSCULOSKELETAL COMPLICATION OF DIABETES MELLITUS”.

Pharmacology

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ABSTRACT

Diabetes Mellitus is a common condition affecting individuals of either gender. The onset has been observed at early age making it more difficult to differentiate between type I & type II. This health problem has added to the global burden and would further contribute to the health expenses as it is expected to increase with the global prevalence to 738 million by 2045. It is generally associated with complications due to long standing disease or due to poor glycemic control.

Trigger Finger is one of the common musculoskeletal diabetic complication seen in long standing diabetics with poor glycemic control affecting individuals of any age and either gender but, more commonly the elderly. Trigger Finger is found to be associated with co-morbid conditions like diabetes, rheumatoid arthritis, gout etc. causing significant functional impairment.

The present study reviews the prevalence, pathophysiology, epidemiology along with the management of the musculoskeletal conditions.

KEYWORDS

Diabetes mellitus, Musculoskeletal complications, Trigger Finger.

INTRODUCTION:

Diabetes Mellitus, a non-communicable disorder, adds to global burden with pandemic proportions affecting individuals of either gender irrespective of the socioeconomic status. The global prevalence of Diabetes Mellitus, approximately 537 million in December 2021, is expected to increase to 738 million by 2045[1]. The Type II Diabetes Mellitus, commonly known as the maturity onset Diabetes, is today affecting the young individuals even below the age of 30 years. On long standing, Diabetes Mellitus, leads to several systemic organ damages due to the effect of blood glucose levels on the vascular and neurological systems.

The vascular complications generally ignored are more dangerous as they cause dangerous endothelium damage in the micro vessels which ultimately lead to degenerative changes and ischemia, thus, leading to the damage of nerves, kidneys, musculoskeletal system and the eyes. Generally, examination on a long standing diabetic individual focuses on the retinopathy, nephropathy, diabetic foot, etc. But, the diabetic hand syndrome a complicated musculoskeletal problem is often neglected, while it is found to be affecting 8% to 50% of all patients with Diabetes Mellitus [2,3].



Fig 1. Image of trigger finger of ring finger

Prevalence:

The Locked fingers or Trigger finger/Trigger digits is one of the common musculoskeletal diabetic complication usually seen in long standing poorly controlled diabetic cases. It has been affecting any population and individuals of either gender [4,5,6]. The incidence has been four times higher in diabetic individuals (5% to 20%) as compared to the general population [7,8,9]. However, it is observed in

some of the studies (1% to 2%) that there is no increase in the incidence of this condition in diabetic patients [10]

Further, it has been observed in some studies that women are affected twice as compared to the men with the peak prevalence observed in the individuals with the age ranging from 50 to 59 years [11]. The Trigger Finger is also known as Locked finger or Stenosing tenosynovitis / Tenovaginitis or Digits saltans. It is a very painful condition affecting one or more fingers.

Pathophysiology:

It is commonly found to affect the ring finger or thumb which end up in bent position with difficulty to straighten out. This is due to the inflammation and subsequent narrowing of the A1 pulley of the affected digit that occurs due to the accumulation of advanced glycation end products (AGE) and calcifications which are responsible for oxidative stress and inflammation that affect to cause micro and macro vascular damage resulting into the change in the structure and function of the tendons to affect the quality of life [7,12,13,14].

The advanced glycation end products are recognized by the specific cell surface receptors which interacts with the AGE to form covalent cross links in the collagen fibers to contribute to the structural and functional damage to the tendon [15,16]. With the multifactorial etiology, Trigger Finger is associated with the comorbid conditions such as, Diabetes, Rheumatoid arthritis, Amyloidosis, Gout, Thyroid disease and Traumatic conditions that result in the narrowing of the tendon and sheath. In children, it is commonly associated with Herler's syndrome or juvenile rheumatoid arthritis [17,18].

Based on the clinical findings (during flexion and extension) the condition of Trigger Finger is graded as follows; Grade-0 as normal movements, Grade-1 as uneven movements, Grade-2 as actively correctable, Grade-3 as passively correctable and Grade-4 as fixed deformity [19].

Prevention and Treatment of Trigger Finger:

As discussed above, Trigger Finger is seen in diabetic and non-diabetic individuals, thus, making it essential to understand that the treatment and the outcome would depend based on the individual cases [20]. In case of diabetic individuals with Trigger Finger, glycemic control is most important aspect along with its management [21]. The management of Trigger Finger can be either conservative or surgical.

Conservative Treatment; The conservative treatment of Trigger Finger mainly includes.

Non- invasive and invasive treatment.

a) **Non-invasive Treatment:** This includes the rest for the affected

digits by avoiding activities which involve repetitive gripping, grasping or use of any vibrating machines. It can be managed by the use of **Splints** to keep the affected fingers in extended position for a duration of 6 weeks that helps to rest the tendon along with gentle exercises in the form of physiotherapy to help and maintain the mobility of fingers, and the use of non-steroidal anti-inflammatory drugs which provide symptomatic relief [22].

As an advanced non-invasive alternative, **Extracorporeal Shock Wave Therapy** (ESWT) is an alternative to the surgical treatment and steroid injections which can reduce the pain, its severity and the functional impact with its effect lasting for about 4 months. This ESWT would be beneficial as it suppresses the inflammation in the soft tissues by causing tissue regeneration and the stimulation of Nitric Oxide Synthase [23,24,25].

b) Invasive Treatment: The invasive management includes the use of **Steroid injections** preferably either methylprednisolone acetate or triamcinolone acetonide as they are proved to be safe [26,27,28]. The steroid injection near or into the tendon sheath may reduce inflammation allowing the tendon to glide freely. However, use of steroids in diabetic individuals needs to be administered with caution as it can result in hyperglycemia, further increasing the recurrence rate in individuals with diabetes mellitus [29,30,31].

Percutaneous release is another surgical approach that helps break apart the constrictions which is blocking the smooth motion of the tendons. The procedure is generally done under ultrasound control to avoid the damage of either tendon or the neighboring nerves.

Surgical Treatment: The surgical approach as a definitive treatment with success rate ranging up to 99% is recommended when the conservative treatment does not benefit the patient. The surgical approach includes the release of A1 pulley which is considered as a gold standard for the surgical management of Trigger Finger which should be followed by long term physiotherapy and exercise [26].

CONCLUSION:

With a wide range of severity of the symptoms, Trigger Finger is likely to affect either single or multiple digits involving either one or both the hands. Considering its appearance to be more common in diabetic individuals emphasis, on the glycemic control, lifestyle modifications, exercises and regular health check-ups is important. This musculoskeletal condition untreated would lead to the complications. While, timely diagnosis and management would be more beneficial to avoid expenses toward surgical approach and its related complications.

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