Pentazocine-induced contractures: Dilemma in management

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Introduction

Myopathy has frequently been associated with repeated intramuscular injections of narcotic analgesics such as pentazocine, butorphanol, propoxyphene, heroin, piritramide, methadone, and meperidine. Pentazocine is a commonly used synthetic narcotic analgesic for moderate to severe pain secondary to various conditions. The side-effects and complications of its use could be tense woody skin fibrosis, punched out irregular skin ulceration, abnormal skin pigmentation,¹² symmetrical fibrous myopathy, bilateral deep vein thrombosis,¹³ and contractures.¹⁰ Fibrosis has been reported in the muscles at the site of injection as well as in noninjected muscles.¹⁹ Myogenic contractures can be due to trauma, inflammation, degenerative changes, ischemia, and spasticity. There are few reports of myopathy following chronic pentazocine administration. Myogenic contracture due to parenteral narcotic abuse is a rare entity. We present a case of pentazocine dependence with myopathy as a complication and discuss the associated issues.

Case Report

A 32-year-old female patient presented with the complaints of inability to stand erect and walking in equinus both sides along with stiffness of knees and ankles in our outpatient facility. She was nondiabetic and normotensive. She gave the history of chronic abuse of self-administered injection pentazocine (up to two ampoules [60 mg/day intramuscularly] over a period of 2 years. She was apparently well 8 years back, when she developed pain in abdomen. Pain was acute in onset and colicky in nature. It was too severe to be reduced by oral medications, so she was advised pentazocine injections intramuscularly by a local physician for relief of pain. She took the unsupervised injections intramuscularly over anterior thigh and calf on both sides. Gradually she developed stiffness at both knee and ankle joints followed by contractures.

On general examination, her cardiopulmonary and neurological examination showed no abnormality except stiffness of both knee and ankle joints. On local examination of

ABSTRACT

Pentazocine is a commonly used synthetic opioid analgesic for moderate to severe pain secondary to various conditions. Complications of parenteral opioid abuse including localized ulcerations, abscess, indurations, and sclerosis are well-documented. We present a rare case of drug abuse due to pentazocine (Fortwin) in a 32-year-old female, who had severe myogenic contractures of her knee joints.

KEY WORDS: Contractures, myopathy, pentazocine, pentazocine abuse

Drug Watch

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both lower limbs, tone of musculature gave feeling of abnormal woody hardness with shining skin over thigh and calf muscles. Multiple small healed abscesses scars were seen. Active and passive movement restriction was observed in both knees and ankles. Her feet were in equinus; more severe on right side and few degrees (10–15°) of dorsiflexion was seen on either side but unable to come to neutral position. She was unable to squat and sit cross-legged. There was 60° flexion contracture at right knee joint and 80° at left knee joint. Tendoachillis was tight on both sides. Both hips showed secondary flexion deformities [Figure 1].

Her routine blood investigations were within normal limits with hemoglobin-11 g/dL, total leukocyte count-5600/cmm, differential leukocyte count: Neutrophils-56%, lymphocytes-40%, eosinophils-2%, monocytes-2%, erythrocyte sedimentation rate (Wintrobe’s method)-22 mm in 1st h, serum calcium-8.6 mg/dL, serum phosphorus-2.9 mg/dl, serum alkaline phosphatase-158 international unit, blood sugar (random)-132 mg %, blood urea-24 mg/dL, serum creatine-0.5 mg/dl, serum creatine phosphokinase (CPK)-70 IU. Elisa test for HIV, hepatitis C and hepatitis B surface antigen, all were found negative. Electromyographic (EMG) of bilateral gastrocnemius, tibialis anterior and vastus medialis revealed normal EMG pattern. High resolution sonography with color flow imaging and extended field of view imaging was done for evaluation of both thighs with direct contact scanning technique with 10 and 12 MHz transducers. Both thigh muscles were well visualized. The muscles were echogenic in texture but normal muscle bundle appearance was lost. The pinnate fiber was lost. It involved the diffuse muscle in anterolateral compartment. No evidence of any mass or calcification was seen. The findings were suggestive of echogenic pattern of the thigh muscle with loss of normal muscle texture and suggestive of diffuse fibrosis.

Arteriovenous color Doppler study of both lower limbs was normal. Skiagram of both knees (anterior-posterior and lateral) showed normal articular cartilage, without any erosions or calcification [Figure 2].

These clinical findings suggested the diagnosis of pentazocine (fortwin) abuse leading to generalized muscle fibrosis and flexion contractures of both hip and knee joints. Patient came to us for correction of flexion deformities in both knee joints. Patient was advised gradual passive stretching of hamstrings, skin traction, ankle mobilization exercises, gait training with a walking stick. While she was advised exercises, she was also advised to attend de-addiction program. Her family was counseled to provide her long term good care, support and help in her rehabilitation process. The surgical intervention was another option for her for which she had not consented presently. Meanwhile she is now not dependent on pentazocine and she was put on skeletal traction on both lower limbs. Right limb contracture decreased significantly but left limb contracture was static after 8 weeks of skeletal traction. These type of contracture resistant to conservative means are candidates for surgical interventions. However neither the patient has given consent for surgical intervention nor we are sure for surgical outcome in case of severe skin and muscle fibrosis as we could not find much supporting literature.

Discussion

Fibrous myopathy has been described in association with the repeated intramuscular injections of narcotic analgesics. Clinical presentation vary case to case depending on site, amount and duration of drug use. Pentazocine-induced myofibrosis mainly involves muscles around hip and shoulder joints following long-standing pentazocine abuse. Many authors have tried to study the exact pathogenesis of cutaneous complications of pentazocine and suggested that pentazocine is most soluble in acidic conditions and may get precipitated in the slightly alkaline pH of extracellular fluid, which then initiates a chronic inflammatory response. Differential diagnoses of myogenic contractures include hereditary myopathies, Ankylosing spondylitis, Stiffman syndrome, Myositis ossificans, arthrogryposis, and parathyroid disease. Ankylosing spondylitis was ruled out as there was
The association of pentazocine has been observed in various studies, including the case of contracture, which may be locally or generalized. In every case, control intervention should be started as early as possible to save each joint. In every case of contracture, may be locally or generalized we must take corrective exercises and management of contracture should be started.

In the present case, both knee joints were having no joint pathology as evident by normal skiagram. Normal CPK value and normal EMG pattern ruled out any ongoing muscle destruction pathology as reported in few studies. Schlicher et al.\(^\text{22}\) reported that pentazocine injection precipitates in extracellular tissue resulting in inflammation. Palestine et al.\(^\text{22}\) had observed fibrosis endarteritis, vascular thrombosis, granulomatous inflammation, and fat necrosis in histopathological studies in muscles after repeated use of pentazocine parenterally. There is no known threshold for the amount of drug, number of injections or frequency of injections that could possibly be related to fibrous replacement of muscle tissue, neither it is clear whether the condition is reversible in any time frame. It is a common practice to use pentazocine (Fortwin) for management of severe chronic pain and slowly the individual becomes an addict. Good number of studies are presently available to demonstrate the long term use of pentazocine and its ill-effects leading to sclerotic ulcers, myopathy, and contractures. In such cases, de-addiction therapy, counseling and treatment of contractures should be started as early as possible to save each joint. In every case of contracture, may be locally or generalized we must take proper history for a potential drug abuse.

Prescription drug abuse is a major health problem across the globe. Various other drugs, such as analgesics, cough syrups, vitamin preparations, and laxatives among others, are being used by individuals for reasons other than the medical indication. The availability of these drugs over the counter precludes the requirement of a prescription to procure them. With free over-the-counter access to these drugs in India and many developing countries, awareness of this complication is important so that unwanted side-effects can be avoided. Moreover, in cases such as that reported here, the drugs are initially prescribed for a medical indication and subsequent use by the patient continues without the advice of a physician.

**Conclusions**

The abuse of prescription opioids, such as pentazocine, is being increasingly reported across globe including India. Clinicians should be careful about the abuse potential of these compounds and cautious when dealing with individuals with a history of substance abuse and/or dependence. This would help in preventing such drug abuse and its complications and whenever problem is suspected intervention for deaddiction, corrective exercises and management of contracture should be instituted.

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**Conflicts of Interest**

There are no conflicts of interest.

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