

Hyperhidrosis in Two Patients with Spinal Cord Injury Treated with Oxybutynin: Case Reports and Review of the Literature

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Abstract

Hyperhidrosis is a well-documented consequence of spinal cord injuries (SCI). It affects about 25% of the subjects with SCI representing a social problem, a cause of discomfort and a risk for skin breakdown. Here we present two cases of young subjects with a complete spinal cord lesion at thoracic level, who complained of abnormal sweating. In both patients other possible causes of hyperhidrosis were ruled out. Both subjects were put on pharmacological therapy with oral oxybutynin with immediate relief of the sweating. Although oxybutynin is a very well-known drug in the field of SCI and in the field of idiopathic hyperhidrosis, this is the first time that oxybutynin efficacy in abnormal sweating after SCI has been demonstrated.

Keywords: Spinal Cord Injury; Hyperhidrosis; Oxybutynin

Introduction

Hyperhidrosis is a frequent problem in persons with spinal cord injury. The prevalence of abnormal sweating is reported to be about 25% of the subjects with SCI [1]. While a part of these subjects may experiment hyperhidrosis as a part of autonomic dysreflexia, in other cases the symptom is not linked to an abnormal sympathetic activation [1]. Hyperhidrosis may represent a problem for subjects with SCI because it can cause discomfort and because of an increased risk of skin breakdown related to skin maceration [2]. Here we report two cases of subjects with SCI and abnormal sweating successfully treated with oxybutynin.

Case Reports

Case 1

A 26-year-old paraplegic man with a traumatic American Spinal Injury Association (ASIA) Impairment Scale (AIS) A, T5 lesion was admitted to our ward for his first rehabilitation cycle after the injury. The patient did not report any previous pathological condition. He suffered from a motorcycle accident with polytrauma and T6 burst fracture with complete paraplegia; he also had thoracic trauma with pleural effusion, requiring pleural drainage. He underwent neurosurgical intervention with T5-T6 and T7 laminectomy, spinal cord decompression and posterior spinal fusion with instrumentation from T4 to T8. During his rehabilitation stay he developed a small pressure ulcer in the sacral region. Approximately three months after the SCI he began to present abnormal sweating that soaked his dresses and prompted him to change his shirt several times a day. Hyperhidrosis was not accompanied by other signs or symptoms of autonomic dysreflexia (headache, hypertension, anxiety, bradycardia, piloerection). Urinary tract infections and renal and bladder

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calculi were ruled out with appropriate examinations. Other possible causes of hyperhidrosis such as hyperthyroidism or other hormonal disorders, hormonal therapies, idiopathic hyperhidrosis were also excluded. The patient tried using antiperspirants without any success. After about one month, based on previous reports on the use of anticholinergic drugs to treat abnormal sweating in subjects with SCI, he was started on oral oxybutynin at 5 mg twice a day. This therapy was accompanied by an immediate reduction of hyperhidrosis. He no longer needed to change his dresses along the day and night. The patient did not report adverse events.

Case 2

A 26-year-old paraplegic man with a traumatic American Spinal Injury Association (ASIA) Impairment Scale (AIS) A, T5 lesion without any previous pathological conditions. He was victim of a motorcycle accident in which he suffered from concussive brain injury, fracture of the proximal epiphysis of the left humerus, bifocal fracture of the left femur, left tibia and fibula fracture, multiple vertebral fractures at thoracic level with epidural haematoma extended from T5 to T10 and immediate paraplegia. He underwent orthopaedic intervention to stabilize the fractures of the left arm and leg. He was admitted to our ward about four months after the accident with a pressure sore at sacral and left heel level. Two months after admission he complained of abnormal hyperhidrosis. All the possible causes of abnormal sweating and, in particular, autonomic dysreflexia were ruled out based on the absence of other symptoms and on appropriate examinations. Treatment with oral oxybutynin was started at a dosage of 5 mg twice a day with an immediate resolution of sweating. Also this patient did not report adverse events.

Discussion

Hyperhidrosis is a condition quite typical after spinal cord injury. Andersen [1] reported that 25% of the subjects who answered to a survey on this issue were affected by this complication and that in about 20% of the subjects hyperhidrosis seemed to have no underlying cause. The pathophysiology of this condition is unclear, although it has been postulated that it is due to a lack of descending inhibition with continuous facilitation of the sweat glands [3]. Hyperhidrosis may start in the acute or sub-acute phase after the spinal cord injury [4] and usually presents in body regions in relationship with the level of the lesion (head, neck and, sometimes upper limbs for those with cervical lesions, trunk for those with high thoracic lesion and lower limbs for those with low thoracic lesions) [3].

Several different treatments have been used to treat this complication of spinal cord injury, varying from topical agents (talc, starch, aluminium salt, formaldehyde) [5] to oral medications that include analgesics (propoxyphene and dextropropoxyphene) [1,6], alpha-adrenergic

blockers (phenoxybenzamine) [7], anticholinergic agents (methantheline, propantheline bromide, bornaprine) [4, 8, 9], antiepileptic drugs (gabapentin) [10], to transdermal patch of scopolamine [2]; Sympathectomy has also been suggested in cases of hyperhidrosis resistant to pharmacological treatment [11]. For idiopathic hyperhidrosis more invasive interventions have been suggested, including botulinum toxin injections [5], acupuncture [1], and epidural morphine [1] which have never been attempted in subjects with SCI.

Here we present two cases of patients with spinal cord injury and hyperhidrosis successfully treated with oxybutynin. Both cases presented with disturbing abnormal sweating that completely disappeared after oral oxybutynin was started. Oxybutynin is an anti-muscarinic drug. Its action is not very selective compared to other anti-muscarinic agents as it interferes with all five muscarinic receptors (M1-M5) although with greater affinity for M3 receptors [12]. M3 receptors are the main target receptors on the detrusor muscle, but it has been reported that these receptors are those most involved in sweating [13]. Oxybutynin is a very well-known drug in the field of spinal cord injury as it is widely used to treat neurogenic bladder with detrusor over activity [14]. Oxybutynin is well known also in the field of hyperhidrosis: several trials documented that oxybutynin may relieve abnormal sweating in more than 70% of the treated subjects [15] and that this effect is maintained in about 83% of the subjects at 24 weeks assessment [16]. Despite these data, to our knowledge, this is the first report on the use of oxybutynin to treat hyperhidrosis in subjects with SCI.

Consent for Publication

Written informed consent was obtained from the patients for publications of this case reports.

Conflicts of Interest

All authors declare that they have no conflicts of interest.

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