Task specific focal hand dystonia in professional beedi (Indian Cigarette) maker- A Case Report

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Abstract

Task specific dystonia is specific type of dystonia that appear mainly at the time of specific task performance. There are many types of task specific dystonias described in literature. Here we report a patient with task specific focal hand dystonia associated with highly skilled work of beedi making. Although the precise pathophysiology remains unclear, it is thought that abnormalities within basal ganglia or its connections, decreased inhibition at various levels of sensorimotor systems, abnormal plasticity, and impaired sensorimotor processing are probable mechanisms. Botulinum toxin injection is most effective for treatment of focal dystonia. Other treatment modalities are anticholinergic, dopaminergic, and GAB Aergic medications, surgery, rest and rehabilitation techniques.

Key Words: *Task specific dystonia; Professional Beedi making*

Introduction

Dystonias are a group of movement disorder characterized by abnormal involuntary, sustained muscle contractions or repetitive movement due to co-contraction of agonistic and antagonistic muscles. The term "focal" refers to a type of dystonia that affects a single part of the body, such as the hand or jaw. Task-specific focal dystonia is a movement disorder that interferes with the performance of particular tasks that involve highly skilled motor movements, such as writing, playing a musical instrument, or participating in a sport. There are many types of task specific focal dystonias described in literature, but task specific dystonia associated with professional beedi makers has not yet been reported in literature.

A beedi is a thin, Indian cigarette filled with tobacco flake and wrapped in a tendu leaf, tied with a string at one end. Beedi smoking is a traditional method of tobacco use throughout South Asia and parts of the Middle East. In bundelkhand region beedi making is a popular profession.

Case Report

A 40 year male patient presents to neurology OPD with complain of involuntary posturing of right hand while rolling of tendu leaf between fingers and thumb for making beedi. This involuntary posturing involve flexion at metacarpo-phalangeal and inter-phalangeal joints of 3rd, 4th and 5th fingers and extension at metacarpo-phalangeal joints and inter-phalangeal joints of index finger and thumb of right hand. He has been working in the beedi making industry for last 10 years and this complain started since last 6 months. This abnormal posturing of hand appears specifically only at the time of making beedi and not during other daily routine activities. There was no history of trauma, neck pain, upper limb pain, paraesthesias, tremors or weakness. His neurological examination was within normal limits. Patient was started on trihexyphenidyl with partial improvement in his symptoms.

Discussion and Review of Literature

Task-specific dystonias are primary focal dystonias characterized by excessive muscle contractions producing abnormal postures during selective motor activities that often involve highly skilled, repetitive movements. Commonly described task specific dystonias are- writer's cramp, telegrapher's cramp, Piano-player's cramp, Violinists' cramp, typist's cramp, dancer's cramp, shoemaker's dystonia, laryngeal dystonia, tailor's dystonia, golfer's yip, hair-dresser and Embouchure dystonia[1]. Symptoms may begin with lack of dexterity during performance of a

specific motor task with increasingly abnormal posturing of the involved body part as motor activity continues. Initially, the dystonia may manifest only during the performance of the inciting task, but as the condition progresses it may also occur during other activities or even at rest. Neurological exam is usually unremarkable except for the dystonia-related abnormalities. Although the precise pathophysiology remains unclear, increasing evidence suggests abnormalities within the basal ganglia or its connections, decreased inhibition at various levels of sensorimotor systems, abnormal plasticity, and impaired sensorimotor processing leads to generation of dystonia[2].

The usual age of onset of task-specific dystonias is third to sixth decade of life[3,1]. Initial symptoms may include a feeling of painless tightness, fatigue, and lack of dexterity with subsequent development of uncontrollable activation of surrounding muscles and abnormal movements during a specific, highly skilled motor task. Other activities requiring the same muscles may be performed normally[1].

Neurophysiologic studies of patients with writer's cramp, typist's cramp, pianist's and guitarist's cramp have shown the simultaneous activation of agonist and antagonist muscles (cocontraction), activation of muscles that are usually not involved on the task (overflow) and excessive contraction[4,5]. Cocontraction is not specific for dystonia because anyone voluntarily holding the limb stiffly could have similar electromyographic findings. However, a study examined the mechanisms underlying cocontraction in patients with writer's cramp, indicating that cocontraction in dystonia is neurophysiologically different from voluntary cocontraction and could be produced by abnormal synchronization of presynaptic inputs to antagonist motor units[4].

Although not routinely recommended for diagnosis, nerve conduction and electromyography studies may help identify other peripheral nervous system abnormalities such as carpal tunnel syndrome that could be exacerbated by focal dystonia. Brain imaging for diagnostic purposes is not routinely recommended[6].

Till now, task specific dystonia associated with professional beedi making is not reported in literature. While beedi making, person has to do highly skilled repetitive movement of thumb and fingers for rolling of tendu leaf and tying it with string at one end. This movement provides ground for same pathophysiology as in other types of task specific dystonias.

Pharmacological treatment includes anticholinergic, dopaminergic, and GAB Aergic medications with inconsistent results[7]. Botulinum toxin injection(BTN) is most effective and only approved treatment by US FDA[8-10]. Botulinum toxin blocks gamma motor neuron preferentially over alpha motor neurons and decrease activity of muscle spindle more than extra-fusal fibres. Surgical treatment includes pallidotomy and pallidal deep-brain stimulation[11]. Rest, sensory motor retraining, non-stressful hand rehabilitation are non-pharmacological technique used for task specific dystonia[12].

Conclusion

Highly skilled work of professional beedi making is associated with generation of task specific focal hand dystonia. Oral medications have been anecdotally beneficial in these patients. BNT injections may provide greater benefit to many but still have substantial limitations. The roles of surgery and rehabilitation approaches remain to be determined but are areas of active investigation.

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