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Intermittent Priapism in Degenerative Lumbar Spinal Stenosis: Case Report

Dejeneratif Lomber Dar Kanala Bağlı Aralıklı Priapizm: Olgu Sunumu

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ABSTRACT

BACKGROUND: Symptomatic lumbar spinal stenosis produces gradually progressive back and leg pain with standing and walking, relieved by sitting or lying. One of the uncommon symptoms is involuntary intermittent penile erection due to spinal canal stenosis. This symptom is very rare and often forgotten when history is taken.

METHODS: In this case report, a patient suffering from intermittent priapism due to degenerative spinal canal stenosis and spondylolisthesis is described. On admission his symptoms were intermittent neurogenic claudication and involuntary erection provoked by walking a short distance.

RESULTS: Bilateral laminectomy and posterior fusion was performed. His symptoms resolved over the first postoperative days.

CONCLUSION: Cauda equina compression due to LSS may rarely cause intermittent priapism. This rare symptom should not be forgotten when taking the patient's history and should also be kept in mind during follow-up.

KEY WORDS: Lumbar, Spinal, Stenosis, Neurogenic, Priapism, Intermittent

ÖZ

AMAÇ: Semptomatik lomber dar kanal olgularında, zamanla artan bel ağrısı, ayakta durmakla ve yürümekle artan ve dinlenmekle gerileyen bacak ağrısı şikayetleri oluşmaktadır. Oldukça nadir rastlanan semptomlardan bir tanesi de istem dışı oluşan aralıklı penil ereksiyondur. Bu semptom hastaların hikayesi soruşturulurken sıklıkla unutulur.

YÖNTEM: Bu olgu sunumunda, lomber dar kanal ve spondilolistezise bağlı aralıklı priapizmi olan bir hasta sunuldu. Başvuru sırasında hastanın şikayetleri, kısa mesafe yürümekle oluşan aralıklı nörojenik klaudikasyo ve istemsiz penil ereksiyondu.

BULGULAR: Bilateral laminektomi ve posterior füzyon uygulandı. Ameliyat sonrası erken dönemde hastanın semptomlarında belirgin düzelme gözlendi.

SONUÇ: Nadiren, lomber dar kanala bağlı kauda equina basısı aralıklı priapizme neden olabilir. Bu nadir semptomun hastaları hikayesi alınırken sorgulanması unutulmamalıdır. Bu önemli semptom hasta takibi sırasında da akılda tutulmalıdır.

ANAHTAR SÖZCÜKLER: Lomber, Spinal, Stenoz, Nörojenik, Priapizm, Aralıklı

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BACKGROUND

Lumbar spinal stenosis (LSS) caused by hypertrophy of facets and ligamentum flavum may be exacerbated by disc bulging or spondylolisthesis. Symptomatic stenosis produces gradually progressive back and leg pain with standing and walking, relieved by sitting or lying. One of the uncommon symptoms is involuntary intermittent penile erection due to spinal canal stenosis. This symptom is very rare and often forgotten when the history is taken.

CASE

This 74-year-old male patient was admitted for intermittent claudication caused by walking approximately 50 meters. At the same time he had noticed penile erection without sexual stimulation. The erection was not painful and he had sexual arousal at the same time. The urinary bladder and bowel functions were normal.

Bilateral L5 dermatomal hypoesthesia, abolished achilles reflexes and positive femoral stretching tests were observed on neurological examination. Repeated examinations after exercise showed no change in the findings but a firm erection of the penis was observed, which become flaccid after rest. Physical examination revealed no abnormal findings. Lumbosacral spine x-rays suggested L4-L5 lumbar spondylolisthesis (Figure 1). Magnetic resonance imaging (MRI) of the lumbar spine showed diffuse protrusion of the intervertebral disc, spinal stenosis caused by anterolisthesis and hypertrophic facets and bilateral foraminal stenosis at L4-5 level (Figure 2). Electromyography (EMG) of lower extremities demonstrated chronic and partial involvement of bilateral L4, right L5 and S1 roots at rest. EMG examination repeated after the exercise provoking neurogenic claudication and the penile erection showed no change. Other causes of priapism like hypercoagulopathies, drug usage and malignancy were also investigated but no pathology was found.

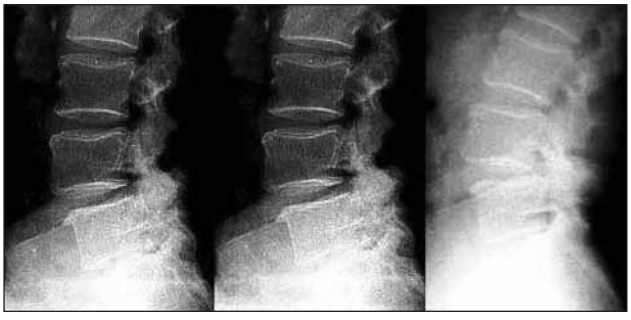

Figure 1: Lateral neutral, flexion and extension lumbar X-rays showing L4-5 spondylolystesis.

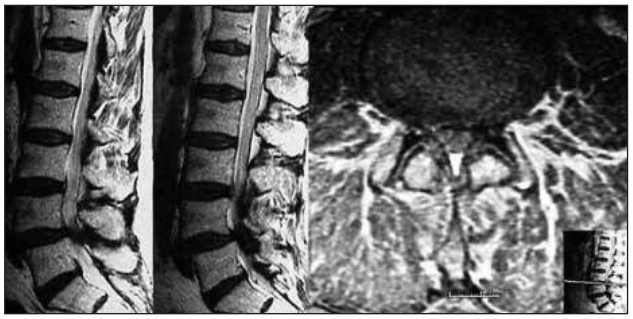

Figure 2: T2W sagittal MRI shows grade I L4-L5 spondylolisthesis with bilateral L4-L5 spinal stenosis and T1W axial MRI shows central canal stenosis and compression of dural sac and cauda equina fibers.

The patient underwent bilateral L4 partial hemilaminectomies with medial facetectomies, bilateral L4 and L5 foraminotomies and L4-L5 discectomy followed by posterior interbody fusion with mesh and autogenous bone graft and L4-L5 posterior transpedicular fixation (Figure 3).

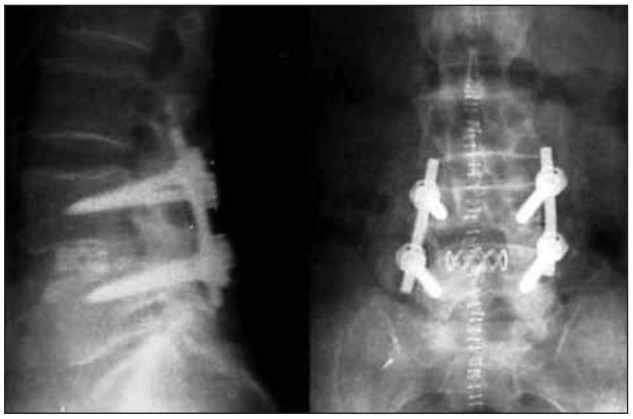

Figure 3: Anteroposterior and lateral X-rays showing bilateral L4 partial hemilaminectomies with medial facetectomies, bilateral L4 and L5 foraminotomies and L4-L5 discectomy followed by posterior interbody fusion with mesh and bone graft and L4-L5 posterior transpedicular fixation

The postoperative period was uneventful with total resolution of the patient's preoperative symptoms. Exercise tolerance, especially by walking, was restored to normal. Penile erection related to walking had also cleared up completely. He had no complaints at six years follow-up.

DISCUSSION

Lumbar spinal stenosis occurs predominantly in elderly men and can be congenital, acquired or both. Some acquired causes are spondylosis, spondylolisthesis, trauma, lumbar spinal fusion and diseases of the skeletal system such as achondroplasia and Paget's disease. This stenosis develops as a result of ligamental hypertrophy, diffuse disc protrusion and degenerative changes of bones and joints. (2)

Signs and symptoms of lumbar spinal stenosis are back pain, sciatica, neurogenic intermittent claudication, motor and sensory deficits and reflex changes. Aching spreading over the sacral dermatomes or painful paresthesias can sometimes develop. These symptoms may be exacerbated by walking and flexion of the lumbar spine such as sitting or crouching forwards and relieved by resting for several minutes (6, 8, 17).

Sensory and motor symptoms of cauda equina are sometimes accompanied by disturbances of bladder function, which may be in the form of retention, incontinence, or recurrent infections caused by the residual urine (14). By presentation of micturation symptoms, cystometry may be normal (14). Rarely cauda equina compression due to LSS may cause intermittent priapism. Brish et al. reported in 1964 a patient with episodic transient erection due to LSS (3). Ravindran also reported in 1976 spontaneous priapism without sphincter disturbances, precipitated by walking (13). In both cases, the patients also had neurogenic claudication and total relief of symptoms was obtained by decompressive laminectomy. Sixteen patients (including our patient) were reported in the literature to suffer from intermittent priapism due to LSS (2, 4, 5, 7, 9, 11, 12). Our patient had severe LSS with spondylolisthesis demonstrated by radiological findings.

Penile erection is a complex involuntary behavioural response that depends on the integration of vascular, endocrine and neurological mechanisms. Stimuli for erection can be classified as psychogenic (visual, olfactory, gustatory etc.) and reflexogenic (stimulation of the glans penis) (18).

Neurophysiologic experiments began over 100 years ago and today we know of three important nervous centres responsible for the function of the penis; namely sacral erection centre, thoracolumbar erection centre and cerebral erection centre (18).

When a sacral collection of visceral nerves were stimulated electrically, the result was an erect penis (dogs). These efferent sacral (parasympathetic) nerves (S2, S3, S4) are termed Nervi Eregentes. Stimulation of the somatic Pudental nerve did not cause erections, but abolition of this nerve blocked reflexogenic erections. This represents a reflex arc around the sacral erection centre. If suprasegmental connections are lost in humans, this arc will continue to function and erections to reflexogenic stimuli only are possible. However, while destruction of the cord at and above this level in experimental animals and humans (usually due to trauma) abolishes the erectile response to reflexogenic stimuli, it does not prevent psychogenically stimulated erections (18).

A second thoracolumbar erection centre exists at the level of T12-L1 and this plays a role in psychogenically-mediated erections via sympathetic efferent fibres. However, there must be connections to the sacral centre within the spinal cord as sympathectomy below the diaphragm in animals does not prevent psychogenically-mediated erections unless the sacral erection centre is also destroyed (18).

The cerebral erection centre is extremely complex. Sensory inputs from all parts of the brain connect in the amygdala, hypothalamus (medial pre-optic area and paraventricular nucleus) and the Barrington's nucleus of the medulla and pons. Fibres travel in the periaquaductal grey matter to the cord where they connect to the thoracolumbar and sacral centres via the lateral columns. While many sensory inputs represent positive psychogenic stimulants, there are also many that are inhibitory (18).

Detumescence is also complex. It occurs if reflexogenic and psychogenic impulses are not maintained, and also post ejaculation (sympathetically mediated). It is likely that detumescence is due to the diminution of parasympathetic cholinergic (vasodilator) impulses and a surge of sympathetic vasoconstrictor impulses mediated by alpha adrenoceptors (18). Following this, NO release ceases and the Polsters on the arterioles contract and those on the venules relax. Outflow now exceeds inflow and the penis becomes flaccid (10). The intermittent priapism exhibited by the patient is related to parasympathetic dysfunction. We believe that LSS causes

parasympathetic impulse block by compression of sacral nerves (S2, S3, S4). Priapism is a persistent involuntary erection which is unrelated to sexual activity (1, 15). Genitourinary trauma, saddle-type injury, direct arterial invasion of penile neoplasm, idiopathic, drugs and medications (intracavernous vasoactive injections (e.g. papaverine), sildenafil citrate (Viagra), antidepressants, antipsychotics, antihypertensives, anticoagulants (heparin and warfarin), androstenedione, cocaine, alcohol, marijuana), thromboembolic or hypercoaguable states (sickle cell disease, polycythaemia, thalassaemia), dialysis, vasculitis, mycoplasma, malignancy, solid cancers (bladder, prostate, penis), leukaemia, metastasis and neurological conditions (spinal cord stenosis, spinal cord transection, trauma to the medulla) can cause this uncomfortable or painful entity (16). In our case, this symptom was completely due to LSS which resolved after decompressive laminectomy, foraminotomy and posterior stabilisation with pedicule screws.

Conclusion: Cauda equina compression due to LSS may rarely cause intermittent priapism. This rare symptom should not be forgotten when taking the patient's history and should also be kept in mind during follow-up.

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