

# An Unusual Case of Neurogenic Sexual Dysfunction Due to Lead Exposure

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**Abstract:** An unusual case of sexual dysfunction due to autonomic neuropathy, secondary to lead poisoning is reported in a radiator repair car mechanic. Pathophysiology of sexual dysfunction secondary to lead induced autonomic neuropathy is discussed. Neurologists who treat sexual dysfunction should be made aware of relationship of metal toxicity producing neurogenic sexual dysfunction.

**Keywords:** Lead poisoning, erectile dysfunction, PDE-5 inhibitors.

## INTRODUCTION

More than 30 million men suffer from erectile dysfunction in US and 150 million worldwide [1]. Erectile dysfunction is frequently a serious symptom or a surrogate marker of an underlying disease [2]. There is no perfect neurogenic erectile dysfunction, only an imperfect or delayed diagnosis of a serious underlying neurologic disease. Men who suffer from erectile dysfunction should be investigated for an underlying suspected disease state. We present a rare case of erectile dysfunction secondary to neurogenic sexual dysfunction because of lead poisoning [3-6].

## CASE REPORT

A 44 year old male radiator repair car mechanic from India was presented at Stony brook University Hospital in Stony Brook, NY complaining of fatigue, dizzy spells, failure to focus, habitually dropping repairing tools, numbness of penis, constipation, periodic headaches, depression, intermittent episodes of abdominal pain and urinary hesitancy. His sexual symptoms included, poor libido, unable to get or maintain an erection, decreased ejaculate and altered orgasms for 3 years duration. He was treated with aphrodisiacs powder in his native country (India) and his sexual symptoms worsened. He had failed all Phosphodiesterase-5 (PDE-5) inhibitors and self injection with prostaglandins for erectile dysfunction.

## Physical Examination

The patient was alert, ambulatory, with a blood pressure of 140/90, and ENT examination was normal. Oral cavity examination revealed normal teeth, and tongue and tonsillar fossa was found to be normal. Gingiva revealed a narrow leaden-blue line, about a few mm in width. Heart and lungs were normal to palpation and auscultation. Abdomen was

soft with active bowel sounds and no bruits. Spine, perineum, and external genitalia were also found to be normal. Rectal examination revealed lax sphincter tone and prostate gland evaluation revealed no nodules or masses. Peripheral pulses were normal and there was no motor or sensory deficit. There was a decreased sensation in the perineal triangle.

## Lab Tests

Complete blood count was normal and a peripheral blood smear basophilic stippling and anemia work up was negative. Basic metabolic panel tests and liver function tests were also found to be normal. The patient's *ante meridiem* (AM) total testosterone level was low which is 180 ng/dL compared to normal range of 250-1100 ng/dL), and prolactin and sex hormone binding globulin levels were normal. Hematological work up was performed in view of the patient's occupational background testing for various heavy metals including lead with a suspicion of possible inhalation of car radiator fumes. Blood level of lead was 80 mcg /dL (normal levels of lead should be less than 20 mcg/dL). The patient was suspected to suffer from autonomic neuropathy induced sexual dysfunction secondary to lead poisoning. Patient was uncooperative, refused duplex Doppler of penis, nerve conduction, and neurobehavioral cognitive function studies, to confirm lead poisoning. He was strongly advised to stop working with car radiators immediately and was clued-up of the occupational hazard of lead poisoning. The patient was given Dimercaprol (British AntiLewisite) parenterally (4 mg/kg body wt) daily as a lead chelator. The patient's lead levels decreased to 7 mcg/dL in 7 days. His sexual symptoms and anemia improved, and his AM total testosterone was normal over period of 3 months (tested every 2 weeks) and he started to respond to PDE-5 inhibitors. Further lead levels could not be obtained as the patient was lost to follow up.

## DISCUSSION

Five physiologic phases of normal male sexual cycle consists of libido, penile erection, emission and ejaculation [7], orgasm [8], and detumescence of penis [9]. Male sexual function integrates several pathways which include,

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cerebrospinal, psychogenic, endocrine, vascular, autonomic, somatic and smooth muscle, skeletal muscle and rigid tunica albuginea and envelopes of dual corpora cavernosa. The central and peripheral neurologic pathways involved in sexual function include brain centers, spinal cord, cavernous nerves and pudendal nerve [10]. Anatomy of the cavernous nerves are mixed autonomic nerves that is responsible for penile erection, ejaculation and detumescence [11]. The pudendal nerve plays an essential role in pudendal evoked potentials, last phases of penile erection, threshold of somatosensory reflexes and ejaculation [12]. Decreased libido is secondary to altered hypothalamic-pituitary axis and altered orgasm [13]. Sexual symptoms in the case reported here included poor libido, unable to get a penile erection, ejaculatory and orgasmic dysfunction due to pelvic autonomic neuropathy secondary to lead poisoning [14, 15].

Unusual sexual symptoms secondary to neurogenic pathways should draw physician's awareness to the possibility of lead poisoning, particularly in workers with occupational exposure to lead and in areas where lead poisoning is endemic [16]. Lead is present in water [17], paint [18], brass plumbing fixtures [19], ayurvedic medicine [20, 21], aphrodisiacs [22], alternative medications [23], etc. Lead is toxic to numerous organ systems, which include bone marrow, muscles, kidneys, endocrine glands, joints, and nervous system [24-27]. Low-level blood lead levels may be causative factors in cognitive dysfunction, neurobehavioral disorders, neurological damage, hypertension, cardiac dysfunction and renal impairment [28]. Occupational exposure to inorganic lead is main features of this unusual case. Lead poisoning in adults primarily results from exposure by inhalation in the workplace [29]. We suspect that this patient suffered from lead poisoning from inhalation of fumes from car radiators and developed autonomic neuropathies which resulted in erectile dysfunction. Chelator therapy is highly effective in such conditions to restore sexual functionality in patients exposed to heavy metals like lead.

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