



Arsenicosis: Unusual Neurological Presentation from West Bengal

Sir,

A 56 year old male farmer- non-smoker, non-alcoholic, nondiabetic and nonhypertensive presented with gradually progressive (distal to proximal) simultaneous weakness of all 4 limbs for eight years- associated with progressive, generalized wasting of limbs with fasciculation. There was increased urinary frequency and urgency with preserved bladder sensation. His higher mental function was intact. Important negative histories were no diurnal or episodic variation in weakness, tingling, numbness, muscle cramps, flexor spasm, cranial nerve involvement, seizures or altered consciousness. Neurological examination revealed hypertonia but diminished power (3/5) in all four limbs and no sensory abnormality. Except knee jerk, all other deep tendon reflexes were increased. Babinski sign was positive but with preserved superficial reflexes.

There were hyperkeratotic skin thickening of both palms and soles (fig.1). Multiple hyper pigmented non itchy maculae of 1-2 mm. diameters were present over palms and soles (raindrop pigmentation).

Investigations revealed moderate anemia of chronic disease. Routine hematology, urine examination and renal function tests were normal. Liver function test indicated chronic liver disease. MRI scan of lumbosacral spine show heterogenous signal changes in L2-L5 vertebrae with indentation of L3 & S1 nerve roots. FNAC from the lesion found organizing inflammation. EMG and NCS of limbs revealed bilateral lumbosacral polyradiculoneuropathy with secondary axonal involvement. Arsenic level in nail and hair tissue and 24-hr. urinary excretion of arsenic was measured:-

	Reference range [1]	On presentation
Hair (mg/kg)	1	1.9
Nail (mg/kg)	1.08	2.13
24-hr urinary arsenic (microg/d)	> 50	257

Diagnosis of ALS refuted according to El Escorial criteria [2].



Fig. 1 : Arsenicosis unusual neurological presentation from West Bengal

The common differential diagnosis of motor neuron diseases (ALS type) are Chiari malformation in brain and cervical spondylotic bar or ruptured cervical disc- excluded by MRI scanning. Multiple sclerosis (early ALS) negated by absent OCB and Immune motor neuropathy by low titer of IgM anti GM₁ antibody. Among other common mimickers important are- plasma cells dyscrasia and lymphomas and heavy metal poisoning (chronic lead poisoning especially) [3] are excluded by clinical and laboratory examination. Among endocrinal mimickers, hyperthyroidism and hyperparathyroidism are excluded appropriately. Chronic arsenic poisoning was confirmed according to diagnostic criteria [1].

So far no report of arsenicosis has stated the presence of both UMN and LMN like features in chronic arsenic poisoning. Peripheral sensory -motor neuropathy is a known entity [1] but UMN features present here is absolutely unknown. Whereas, heavy metals poisoning (lead, aluminum) can mimic ALS, theoretically arsenic can cause the same, yet there is no reported incidence.

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Received: 16.03.2009; Revised: 04.09.2009; Accepted: 04.09.2009

References

1. Guha Mazumdar D.N. Diagnosis and treatment of chronic arsenic poisoning. *Int. Arch. Occu. Environ. Health.* June 2000; 48; 71-79.; available from: www.who.int/entity/water_sanitation_health/dwq/arsenicun4.pdf
2. Brooks BR. El Escorial World Federation of Neurology criteria for the diagnosis of amyotrophic lateral sclerosis. Subcommittee on Motor Neuron Diseases/Amyotrophic Lateral Sclerosis of the World Federation of Neurology Research Group on Neuromuscular Diseases and the El Escorial "Clinical limits of amyotrophic lateral sclerosis" workshop contributors. *J Neurol Sci.* 1994 Jul; 124 Suppl: 96-107
3. Ropper Allan H, Brown Robert H. *Motor System Diseases.* Adams' & Vectors' principles of neurology. 8th Ed. New York: McGraw-Hill; 2005. P.938-44.