

## FOUR CASES OF POLYNEUROPATHY DUE TO HTLV<sub>1</sub> INFECTION IN IMAM REZA HOSPITAL: NORTH EAST OF IRAN

Nemati Karimooy Habiballah<sup>1</sup>, Hassanabady H<sup>2</sup>, Rafatpanah H<sup>3</sup>

### ABSTRACT

HTLV<sub>1</sub> is the first retrovirus which is known to infect human. HTLV<sub>1</sub> infection has two important manifestations including neurologic and hematologic disorders. We report four cases of HTLV<sub>1</sub> polyneuropathy managed between 1999 and 2004 at Imam Reza Hospital Mashad, (north east of Iran). In all the four patients the disease started with paresthesia followed by muscle weakness. All patients had areflexia and most of them suffered from distal hypoesthesia.

**KEY WORDS:** Retrovirus, HIV, HTLV<sub>1</sub>, Polyneuropathy.

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### INTRODUCTION

HTLV<sub>1</sub> is the first retrovirus which is known to infected human.<sup>1</sup> This virus is from Oncorna viruses which has infected 10 to 20 million people in the world.<sup>2,3</sup> The neurologic manifestations included: HTLV<sub>1</sub> associated myelopathy/tropical spastic paraparesis (HAM/TSP), peripheral neuropathy,

radiculoneuropathy, myelopathy, peripheral facial nerve palsy, myasthenia gravis, chronic fatigue, multiple sclerosis like syndrome, cerebellar syndrome, spinocerebellar syndrome and motor neuron disease.<sup>2,4-7</sup> Using anti HTLV<sub>1</sub>, Western Blot and polymerase chain reaction (PCR) revealed that some neurological disorders could be due to HTLV<sub>1</sub> infection.<sup>8</sup> Mashad city which is in the north east of Iran is the endemic area for HTLV<sub>1</sub> infection,<sup>9</sup> one of the causes of polyneuropathy in this area is suspected to be HTLV<sub>1</sub> infection. The HTLV<sub>1</sub> infection as a cause of polyneuropathy was suggested after the other common causes such as diabetes, uremia, hypothyroidism, collagen vascular disease, B12 deficiency, para proteinemia, para neoplastic syndrome and etc,<sup>10</sup> were rejected using tests such as glucose, urea, thyroid function test, CBC, ESR, immunoglobulin electrophoresis and radiographic procedure such as chest X-ray, abdomen and pelvic sonography, complete systemic and neurologic examination, occupational, accidental and suicidal poisoning. We report four polyneuropathy patients due to HTLV<sub>1</sub> infection managed between 1999 and 2004 in neurology unit, Dept. of Internal Medicine, Imam Reza Hospital Mashad (north east of Iran).

1. Dr. Nemati Karimooy Habiballah
2. Dr. Hassanabady H
3. Dr. Rafatpanah H

1-2: Neurology Unit,  
Department of Internal Medicine,  
Imam Reza Hospital,  
Mashhad University of Medical Sciences,  
Mashhad - Iran.

3: Department of Immunology Ghaem Hospital,  
Mashhad University of Medical Sciences,  
Mashhad - Iran.

Correspondence:

Dr. Nemati Karimooy Habiballah ,  
Imam Reza Hospital,  
Mashhad University of Medical Sciences,  
Mashhad,  
Iran.

Email: h\_nemati\_k@yahoo.com

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**Case one:** A thirty years old female with paresthesia and weakness of four limbs since three weeks was referred to neurology clinic. Her paresthesia first started from feet fingers and progressed to proximal of lower limb and distal of upper limbs. The patient was not addicted and there was no history of HTLV<sub>1</sub> infection in her family. In physical examination, muscle force of proximal of four limbs was IV/V and distal in four limbs was II/V and all limbs had areflexia but objective sensation of the limbs was normal. Elisa in two session and western blot, for anti HTLV<sub>1</sub> was positive. Nerve conduction velocity (NCV) and electromyography (EMG) confirmed the axonal and demyelinated sensorimotor polyneuropathy. CSF protein was 55 mg/dl and CSF Anti HTLV<sub>1</sub> was positive. (Table-I & Table-II)

**Case two:** A forty nine years old man with distal paresthesia of four limbs which progressed to muscle weakness since two years was referred to neurology clinic. He was not addicted and HTLV<sub>1</sub> infection in his family was negative. Physical examination showed distal hypoesthesia and areflexia of four limbs. The muscle force of four limbs was IV/V. Using both Elisa in two session and western blot, anti HTLV<sub>1</sub> was positive. NCV and EMG confirmed the axonal and demyelinated sensorimotor polyneuropathy. CSF protein was 40 mg/dl and CSF Anti HTLV<sub>1</sub> was positive.

**Case three:** A 70 years old female with muscle weakness and paresthesia of four limbs since one month before referring of neurology clinic and was admitted in hospital with doubtful paraneoplastic syndrome. She was not addicted and HTLV<sub>1</sub> infection in her family was also negative. Physical examination showed muscle force of distal and proximal of four

limbs was II/V and all limbs had areflexia but objective sensation of the limbs was normal. Elisa in two session and western blot for anti HTLV<sub>1</sub> was positive. NCV and EMG was confirmed the axonal and demyelinated sensorimotor polyneuropathy. CSF protein was 45 mg/dl and CSF Anti HTLV<sub>1</sub> was positive.

**Case four:** A 48 years old man visited the clinic with distal paresthesia of four limbs which progressed to muscle weakness which had started nine years ago before referring to neurology. He was not addicted and HTLV<sub>1</sub> infection in his mother was positive and had Adult T-Cell Leukemia. Physical examination showed distal hypoesthesia and areflexia of four limbs. The muscle force of four limbs was IV/V. Using both Elisa in two session and western blot, anti HTLV<sub>1</sub> was positive. NCV and EMG confirmed the axonal sensorimotor polyneuropathy. CSF protein was 40 mg/dl and CSF Anti HTLV<sub>1</sub> was positive.

## DISCUSSION

HTLV<sub>1</sub> was first identified in T Lymphocytes in a patient with T-cell leukemia in 1979 and in 1985 the relationship of this virus with a type of encephalopathy called HTLV<sub>1</sub> associated myelopathy/tropical spastic paraparesis (HAM/TSP) was described.<sup>1</sup> In last two decades the association of this virus in different diseases including: uveitis, arthritis, poliomyelitis, Sjögren's syndrome, infection dermatitis, vitiligo, alveolitis, polyneuropathy, guillain barre syndrome, peripheral facial nerve palsy, chronic fatigue and myasthenia gravis has been described.<sup>2,4,5</sup>

The infection in tropical areas such as South America, Central Africa, Karaeab islands, South Japan, Middle East (Khorassan region

Table-I: Different symptoms in HTLV<sub>1</sub> polyneuropathy cases

Case	Sex	Age (year)	Duration of disease	Parasthesia	Pain	Muscle weakness	Transfusion History	Familial infection	addiction
1	F	30	21 Days	+	-	+	-	-	-
2	M	49	2 Years	+	-	+	-	-	-
3	F	70	1 Month	+	-	+	-	-	-
4	M	48	9 Years	+	+	-	-	+	-

Table-II: Objective findings in HTLV<sub>1</sub> polyneuropathy

Case	Muscle strength		Tendon reflexes	Sensation disorders	Serum Anti HTLV <sub>1</sub>	western blot	NCV	CSF protein	CSF Anti HTLV <sub>1</sub>
	Prox. Four limbs	Dist. Four limbs							
1	IV/V	II/V	Areflexia	-	+	+	Axonal and demyelinated sensorimotor polyneuropathy	55	+
2	V/V	IV/V	Areflexia	Hypoesthesia	+	+	Axonal sensorimotor polyneuropathy	40	+
3	II/V	II/V	Areflexia	Hypoesthesia	+	+	Axonal sensorimotor polyneuropathy	45	+
4	V/V	IV/V	Areflexia	Hypoesthesia	+	+	Axonal sensorimotor polyneuropathy	40	+

Prox: proximal, Dist : distal

of Iran, South India and South Africa) is endemic. In Europe and North America, the infection to this virus was not present but some cases of infection in individual traveling to tropical areas was reported.<sup>2,3</sup> The prevalence of HTLV<sub>1</sub> infection in the city of Mashhad is 1.16%.<sup>11</sup> The neurological disorders caused by HTLV<sub>1</sub> are: HAM/TSP, peripheral neuropathy, radiculoneuropathy, myopathy, peripheral facial nerve palsy, myasthenia gravis, chronic fatigue, multiple sclerosis like syndrome, cerebellar syndrome, spinocerebellar syndrome, motor neuron disease, amyotrophic lateral sclerosis like syndrome.<sup>6,7</sup> In HAM/TSP, peripheral nerve and muscles could also be affected.<sup>5-12</sup> Polyneuropathy is a term that describe the syndromes resulting from diffuse lesions of peripheral nerves.<sup>13</sup> When a group of patients with chronic polyneuropathy were investigated intensively in a highly specialized center for the study of peripheral nerve diseases, a suitable explanation for this condition could not be found in 24 percent.<sup>10</sup> In all of our reported four cases the disease was started with paresthesia progressing to muscle weakness except case four which did

not have muscle weakness but had limbs pain. The age of our patients was between 30-70 years. All patients had globing and stoking except case one which did not have objective sensation disorder. All four patients had axonal sensorimotor polyneuropathy but case one had demylinization in addition. Only in case one, CSF protein was slightly high (55mg/dl). There was no history of addiction and transfusion among reported cases. The family history of the HTLV<sub>1</sub> infection was only positive in case four with HTLV<sub>1</sub> infection and adult T- cell leukemia due to HTLV<sub>1</sub> infection of his wife and his mother respectively. The results of this study are very important especially for north east region of Iran which is the endemic area of HTLV<sub>1</sub> infection.

## CONCLUSION

In four cases of HTLV<sub>1</sub> associated polyneuropathy, disease started with paresthesia followed by muscle weakness. All patients had areflexia and most of them suffered from distal hypoesthesia. In most cases polyneuropathy was sensorimotor axonal type and in only one case increased CSF protein was found.

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