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ACUTE TRANSVERSE MYELITIS: A CASE REPORT

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ABSTRACT

Acute transverse myelitis (ATM) is an etiologically heterogeneous syndrome with acute or subacute onset, in which inflammation of the spinal cord results in neurologic deficits, manifesting as weakness, sensory loss and autonomic dysfunction. It is frequently associated with infectious or systemic autoimmune diseases, but its etiology remains unknown in a substantial portion of cases, which are classified as idiopathic. However, some new epidemiological data indicating that the incidence of idiopathic ATM is considerably higher in female as compare to male. There is growing evidence that the antibodies targeting this channel protein have pathogenic potential, thereby providing insights into the possible pathogenetic mechanisms of at least one type of ATM **[1]**. This is the case report of 32-year-old female patient who came to hospital with complains of fever afterword's chills since one and half month, chest pain since 15 days and inability to move limbs since 12 days and a known case of diabetes mellitus II (DM-II) since 1 year. The major cause for occurrence of acute transverse myelitis in this patient is inflammation of spinal cord due to history of high fever.

Keywords: ATM (Acute Transverse Myelitis), EMG (Electromyography), CSF (Cerebrospinal fluid), OCBs (Oligo clonal bands), HTN (Hypertension), CVA (Cerebrovascular accident)

INTRODUCTION

Acute transverse myelitis is very less occurring focal inflammatory disorder that starts with the symptoms of rapid onset of weakness, sensory deficits and bowel/ bladder dysfunction. It occurs majorly due to complication regarding infection that may further cause inflammation and leads to acute transverse myelitis **[2]**. The major organ which is affected by acute transverse myelitis is spinal cord, but most commonly affects thoracic region. It may last for few months likely 3-6 months or may lead to permanently diminishing the function. Estimates of the annual incidence of idiopathic or post infectious transverse myelitis range from 1.3 to 8 cases per million. ATM (Acute Transverse Myelitis) is not age limited. The diagnostic criteria for ATM is autonomic dysfunction from spinal cord and T2 hyper intense signal changes on MRI **[3]**. The drugs used to treat the ATM are glucocorticoid, methylprednisolone and dexamethasone, are the potential regimens in the patient contraindicated with glucocorticoid. As the disease progresses patients lose all limb movement, develop bladder dysfunction, and 80–94% of patients report numbness, paresthesia, and dysesthesia when the maximum level of neurologic loss approaches 50% **[2]**. Autonomic symptoms include increased defecation and urine abnormalities, difficulties or incapacity to empty the digestive tract, constipation, and sexual disturbances **[4]**. There are numerous potential causes of ATM, however despite a thorough analysis, the majority of patients are still labelled as idiopathic. Early therapeutic actions are essential to reduce the negative effects of inflammation. Analyzing the cerebrospinal fluid (CSF) is crucial for assessing ATM. Patients diagnosed with ATM should have their CSF cell count, differential count, protein, glucose, oligo clonal bands (OCBs), and IgG index evaluated. The most effective technique for finding OCBs is isoelectric focusing, which offers a significantly better yield and specificity. Examining patients with ATM may benefit greatly from electrophysiologic studies. Electromyography (EMG) and nerve conduction investigations can identify and describe any peripheral neurological pathology, and their exclusion would provide strong evidence in favor of a spinal cord inflammatory process.

Pathophysiology- Both sides of one section of the spinal cord is inflamed in acute transverse myelitis. Nerve cell fiber(myelin) which works as insulting material is often damaged in this disorder. Messagesthat are received by body through spinal cord nerve is interrupted in acute transverse myelitis **(Figure 1) [5]**.

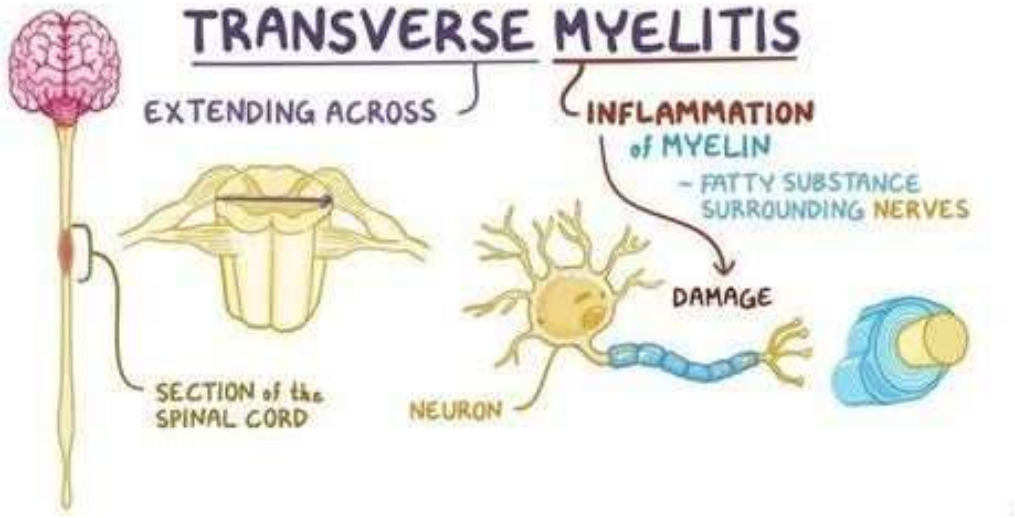


Figure: 1

Case report

A 32-year-old female patient came to tertiary care hospital with complains of fever since 1.5-month, chest pain since 15 days, inability to move limbs since 12 days and was having a history of diabetes mellitus from last 2 years. She was asymptomatic before one month and later complained of low grade fever along with chills which was relieved by medication. After some days she complained of right and left lower limb weakness followed by right and left upper limb weakness. As the symptoms were progressing she was admitted in a nearby hospital. During hospitalization she developed bed sores and was not able to move any body parts, therefore physician gave Injection Methylprednisolone (MPS) 1g IV for duration of 5 days. After completion of the treatment patient was shifted to tertiary hospital because of no improvement in symptoms with the ongoing treatment. Patients condition was deteriorating and soon complained of total urinedefecation and absent of evacuation sensation from last 12 days. The diagnosis was confirmed through magnetic resonance imaging (MRI)- brain +cervico-dorsal spine with contrast which shows abnormal T2 hyperintense intra-modularly signals (C1 to D10 level), involving more than 2/3rdof the cross section of the cord with increase bulk seen, which is shown in **Figure 2**. The above findingmay suggest acute transverse myelitis, other imagine differential includes NMO spectrum disorder. The report of USG abdomen and pelvis shows borderline hepatomegaly with grade one fatty liver, which is shown in **Figure 3**. **Table 1** depicts the CSF analysis report in which fluid protein was highly elevated. **Table 2** illustrates the lab parameters in which it was observed that hemoglobin, neutrophils, lymphocytes and

sugar values were abnormal. During the hospital administration patient was detected with aspiration pneumonia with acute ischemic stroke in known case of DM-II and HTN with Past history of CVA (Cerebrovascular stroke). Stroke was detected in MRI report. Treatment with medication was not showing any improvement signs so she was suggested plasma exchange therapy of total 5 cycle. **Table 3** shows the medications given during the time of admission in tertiary care hospital.

Sri Aurobindo Medical College & P.G. Institute

SAIMS HOSPITAL, INDORE (M.P.)

DEPARTMENT OF RADIOLOGY

Report Id # 11408845-01	UHID # 4295074	Name : Mrs. KUSUM BAI CHOUHAN
Report Date : 16/08/2022 13:02	Reg.ID # ADMIT-791337	Consultant : Dr. --NA--
Deskin. Date : 13/08/2022 20:15	Age : 32 Y Female	Ward : RestICU - 4F
	Patient Type : Non-MLC	Receipt No. : MRI/4773100

MRI – BRAIN + CERVICO-DORSAL SPINE WITH CONTRAST

MRI STUDY IS PERFORMED ON 18 CHANNEL 1.5 TESLA MRI SYSTEM.

TECHNIQUE:

MRI brain, cervical spine is done using T1and T2 sequences in sagittal plane and T2 and high resolution MEDIC sequence in axial plane.

Imaging findings

The brain parenchyma of both hemispheres including thalamus and basal ganglia appear normal in signal intensity and morphology.

The brain stem and cerebellum appear normal.
Bilateral hippocampi are showing normal volume, signals & morphology.
The ventricles, cisterns and sulci appear normal.
There is no evidence of midline shift.

Diffuse abnormal T2 hyperintense intra-medullary signals (C1 to D10 level), involving more than 2/3rd of the cross section of the cord with increase bulkseen. No abnormal enhancement seen.

Normal height of cervical vertebrae.
Intervertebral disc spaces appear normal.
No disc herniation noted.
No bony canal stenosis.
No pre & para spinal soft tissue abnormality.

IMPRESSION: *Above described findings may suggest acute transverse myelitis, other imaging differential include* NMO-spectrum disorder.

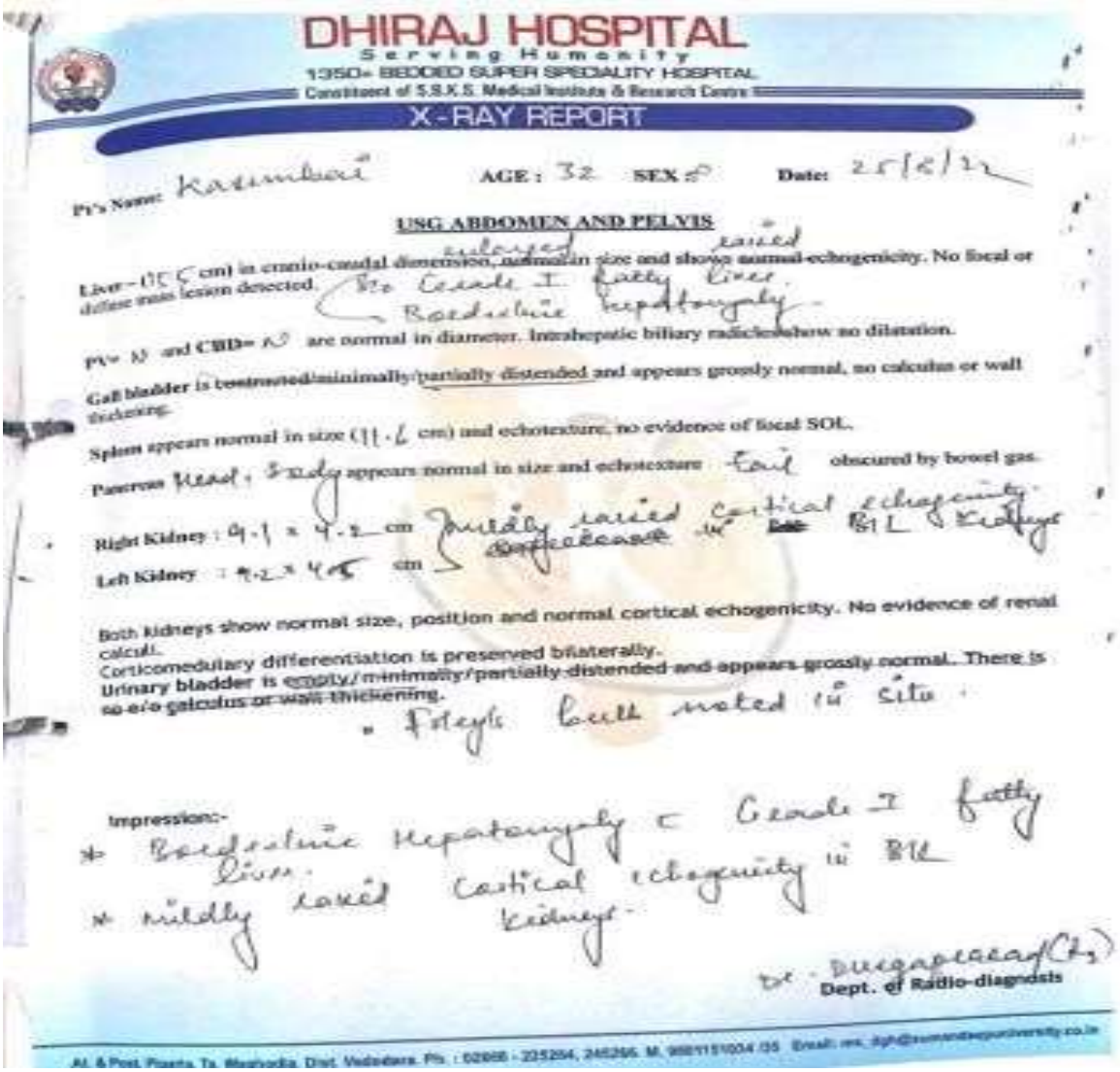
Checked By : -- 15009 DR. MANISH BHAGAT

Dr. Manisah V Bhagat

Page 1 of 2 Patient Name : MRS. KUSUM BAI CHOUHAN Registration : ADMIT-791337

Sri Aurobindo Hospital, Sanwer Road, Indore - 453555 (M.P.)

Figure: 2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X-RAY REPORT

Pt's Name: Kasumben AGE: 32 SEX: F Date: 25/8/22

USG ABDOMEN AND PELVIS

Liver - 15.5 cm in cranio-caudal dimension, enlarged in size and shows raised echogenicity. No focal or diffuse mass lesion detected. ? Grade I fatty liver. ? Bordeline hepatomegaly.

PV= N and CBD= N are normal in diameter. Intrahepatic biliary radicles show no dilatation.

Gall bladder is ~~contracted/minimally/partially distended~~ and appears grossly normal, no calculus or wall thickening.

Spleen appears normal in size (11.6 cm) and echotexture, no evidence of focal SOL.

Pancreas Head + Body appears normal in size and echotexture Fair obscured by bowel gas.

Right Kidney : 9.1 x 4.2 cm
Left Kidney : 9.2 x 4.5 cm
Mildly raised cortical echogenicity in B/L Kidneys

Both kidneys show normal size, position and normal cortical echogenicity. No evidence of renal calculi.
Corticomedullary differentiation is preserved bilaterally.
Urinary bladder is ~~empty/minimally/partially distended~~ and appears grossly normal. There is ~~no e/o calculus or wall thickening~~.

Foleys both noted in situ.

Impression:-
* Bordeline Hepatomegaly ? Grade I fatty liver.
* Mildly raised cortical echogenicity in B/L kidneys.

Dr. Durgaprasad (MD)
Dept. of Radio-diagnosis

At & Post Pipariya Ta. Waghodia, Dist. Vadodara. Ph. : 02668 - 225264, 240266, M. 9825151004 /05 Email: ...

Figure: 3

Table 1: Result of CSF analysis

Spinal fluid	Result	Reference range
Fluid sugar	67	50-80mg/100ml
Fluid protein	154	15-60mg/dl
Lymphocytes	100	20-40%
Appearance	Colorless	Colorless

Table 2: Result of initial investigation

Parameter	Lab value	Reference range
Hb	9.6	11-15%gm
Neutrophils	85	40-60%
Lymphocytes	10	20-40%
Sugar	167	≤140mg/dl
SGPT	49	Up to 40 IU/L
CRP	33.2	≤10mg/dl
PCV	29.7	40-53%
MCV	81.6	82-92%
RBC	3.01	4.4-5.9ml/dl
RDW	17.5	13-15%
HBA_1C	5.8	4-6%

Table 3: Medication chart when patient was enrolled in the hospital

Drug (Brand name)	Content (Generic name)	ROA	Dose/Freq.	INDICATION
Inj.cefix	Ceftriaxone	IV	1g/12 hrly	Antibiotic
Inj.RL/NS+Optineuron	Rectal linger/normal saline+thiamin	IV	80 cc/hrly+30ml/day	Parenteral nutrition
Inj.PAN	Pantoprazole	IV	40mg/24 hrly	Antacid
Inj.EMSET	Ondansetron	IV	4mg/8 hrly	Antiemetic
Inj.lantus	Insulin glargine	IV	30 unit at 10 pm	For DM
Inj.HAI	Hydralazine	IV		For smooth muscle relaxation
Inj.febrinyl	Paracetamol	IV	2 amp/SOS	Antipyretic
Tab.wysolone	Prednisolone	IV	60mg/0-1-0	Anti-inflammatory
Tab.MPS	Methylprednisolone	IV	1g/24 hrly	Anti-inflammatory
Tab. Shelcal	Calcium carbonate	po	500mg/0-1-0	For bone weakness
Tab.pregaba-NT	Pregaban+nortriptyline	PO	75+10mg/0-0-1	For neuropathic pain
Tab. Fole	fluconazole	PO	200mg/1-0-1	Anti-fungal
SYP. Duphalac	Magnesiumhydroxide	PO	10 ml with half glass of water/0-0-1	For constipation
Tab. B29	Thiamin	PO	25 mg/0-1-0	Nutritional supplement
Protein powder	Protein powder	PO	2tsp with half glass of water	For protein supplement
SYP. Potklor	Potassium chloride	PO	15 ml with half glass of water/1-1-1	For hypokalemia
SYP. Grilinctus	Ammonium chloride+ chlorpheniramine+ dextromethorphan+ guaifenesin	PO	5ml/ 0-0-1	For dry cough

DISCUSSION

ATM is a rare acquired neurological condition characterized by focal inflammation and injuryof the spinal cord. Occurrence of ATM is higher in female as compare to male and it is generally because of recognize complication related to viral and bacterial infection. It can alsobe being the first sign of neurologic condition such as multiple sclerosis or neuromyelitis optica. In the reported case patient was diagnosed with ATM by MRI (Magnetic Resonance Imaging) report with the past medical history of DM-II. Latter during hospitalization patient was diagnosed with Ischemic stroke and aspiration pneumonia by CT (Computed Tomography) Scan and MRI. Medication treatment plan for ATM was started in this patient (Table:3) which was followed by plasma exchange therapy. With the medication and plasma exchange therapy patient started feeling minor sensation in upper limbs.

CONCLUSION

A 32-year-old female patient came to tertiary care hospital with complains of fever since 1.5-month, chest pain since 15 days, inability to move limbs since 12 days and with the known history of diabetes mellitus from last 2 years. With the help of MRI report patient was diagnosed with ATM. Antibiotic, antipyretic and anti-

inflammatory drugs was started as an initial therapy. Due to no improvement with the drug therapy, plasma exchange therapy was started. Total of 5 cycles of plasma exchange therapy was prescribed. After completing the 3 cycles of it patient showed improvement in the upper limbs. Patient started feeling sensation in the upper part of the body. But the lower limb didn't show any sensation. After completion of 5 cycle of plasma, minor sensation was noted in the lower limb. Patient started to recover during the treatment course for specific period of time and showed positive improvement in the condition, thus she was discharged. At the time of dischargepatient was prescribed with antibiotic, anti-inflammatory and antipyretic along with advice of physiotherapy.

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