## "A CASE OF ACUTE MYELOPATHY AFTER INTRATHECAL CHEMOTHERAPY IN A PATIENT WITH ACUTE LYMPHOBLASTIC LEUKEMIA"

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### **INTRODUCTION**

The use of intrathecal methotrexate as an antineoplastic drug has been related with the development of acute myelopathy as an adverse effect of the drug. We describe the case of a 5year-old boy with acute lymphoblastic leukemia (ALL), who presented with **polyneuropathy** after the administration of intrathecal methotrexate.

#### **CASE PRESENTATION**

A 5 year old boy with a recent diagnosis of ALL in complete remission after induction chemotherapy, presented with progressive weakness of lower limbs and gait disturbance after the administration of intrathecal metothrexate. The cerebrospinal fluid analysis was negative for leukemic infiltration. Laboratories tests revealed normal creatin phosphokinase (CPK), lactic dehydrogenase (LDH), and liver function testsl. Analysis of the CSF revealed zero White red blood cells, and zero red blood cells, total protein 68 mg/dL, and glucose of 51 mg/dL. Complete blood count showed hemoglobin of 10.1 gr/ dL, white cells 2400/mm<sup>3</sup>, neutrophils 35.4%, lymphocytes 33%, and 130.000/mm<sup>3</sup> platelets. Contrast enhanced MRI of the spine revealed thickening of cauda equina and enhancement of the motor roots from L1 to S2 (Figures 1 and 2). Somatosensory evoked potentials of the tibial nerve revealed a mild alteration of the sensitive route. Nerve conduction studies revealed an acute axonal **motor neuropathy**, without denervation changes. The polyneuropathy was attributed to methotrexate, for which the drug was suspended. Treatment with dextrometrorphan and steroids, lead to resolution of the patient's neurological symptoms. At this time, the patient is still on complete remission of leukemia, and is actually under maintenance with 6 -MP and vincristine.



the cauda equina



 Table 1: Neurological symptoms evolution

Figure 1: Parasagittal T1 weighted lumbosacral spine MRI: thickening of



Figure 2: A) Parasagittal T1 weighted lumbosacral spine MRI with contrats medium: thickening of cauda equina, B) Axial T1 weighted lumbosacral spine with contrast medium: enhancing of the nerve roots (from L1 to S2).

	Strentgh of superior limbs 5/5, inferior limbs 0/5 on proximal muscles and 1/5 on ditals. Patellar areflexia and achilles tendon hyporeflexia.
•	Patellar hyporeflexia, ancle jerk reflex normal.
	Independent gait, hip flexors 4/5, foot flexors and extensors 3/5 of predominantly left
	Independent gait, hip flexors 4/5, foot flexors and extensors 5/5
IS	Gait with bilateral recurvatum, less balancing and increased lumbar lordosis



#### DISCUSSION

Methotrexate is an anti-metabolite broadly used as an antineoplastic agent. It is frequently used for the treatment and prophylaxis of malignancies that involve the CNS, usually delivered intrathecally (IT), Among the adverse effects of this drug, is acute polyneuropathy, which is an infrequent but highly symptomatic complication. The physiopathology of this side effect remains unclear. That said, it is hypothesized that the local depletion of folates after its IT administration could be the cause<sup>1</sup>. The clinical manifestations range from urinary incontinence to motor polyneuropathy and gait disturbances<sup>2</sup>.

The diagnosis of methotrexate-associated polyneuropathy should be based on clinical presentation when the patient has a history of having had received IT chemotherapy. MRI of the spine is recommended as a diagnostic tool. That said, MRI abnormalities due to methotrexate-associated polyneuropathy are non-specific. They may include: spinal cord swelling, and contrast enhancement and T2 hyperintensity of spinal roots<sup>2</sup>. However, a normal MRI does not exclude the presence of myelopathy<sup>3</sup>.

Relating to treatment, Dratchman et al reported some benefit with the administration of dextrometorphan<sup>4</sup>. Finally, additional trials involving folates are on course, with some promising results<sup>5</sup>.

#### **CONCLUSIONS**

Acute myelopathy is an unfrequent complication associated with intrathecal chemotherapy, in this case methotrexate. The neurological complications require special attention and management. We reported the case of a 5-year-old boy with the diagnosis of ALL who presented with acute polyneuropathy after the administration of intrathecal methotrexate.

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