

METHOTREXATE-INDUCED MYELITIS IN A CAUCASIAN GIRL WITH LYMPHOBLASTIC LYMPHOMA AND PHARMACOGENETIC STUDY: CASE REPORT

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Background and importance

Methotrexate (MTX) is widely used in pediatric chemotherapy treatment and is effective. However, it presents a significant toxicity.

Myelopathy is a rare but serious complication, usually related to mechanical damage caused by multiple lumbar punctures and the administration of drugs by this route.

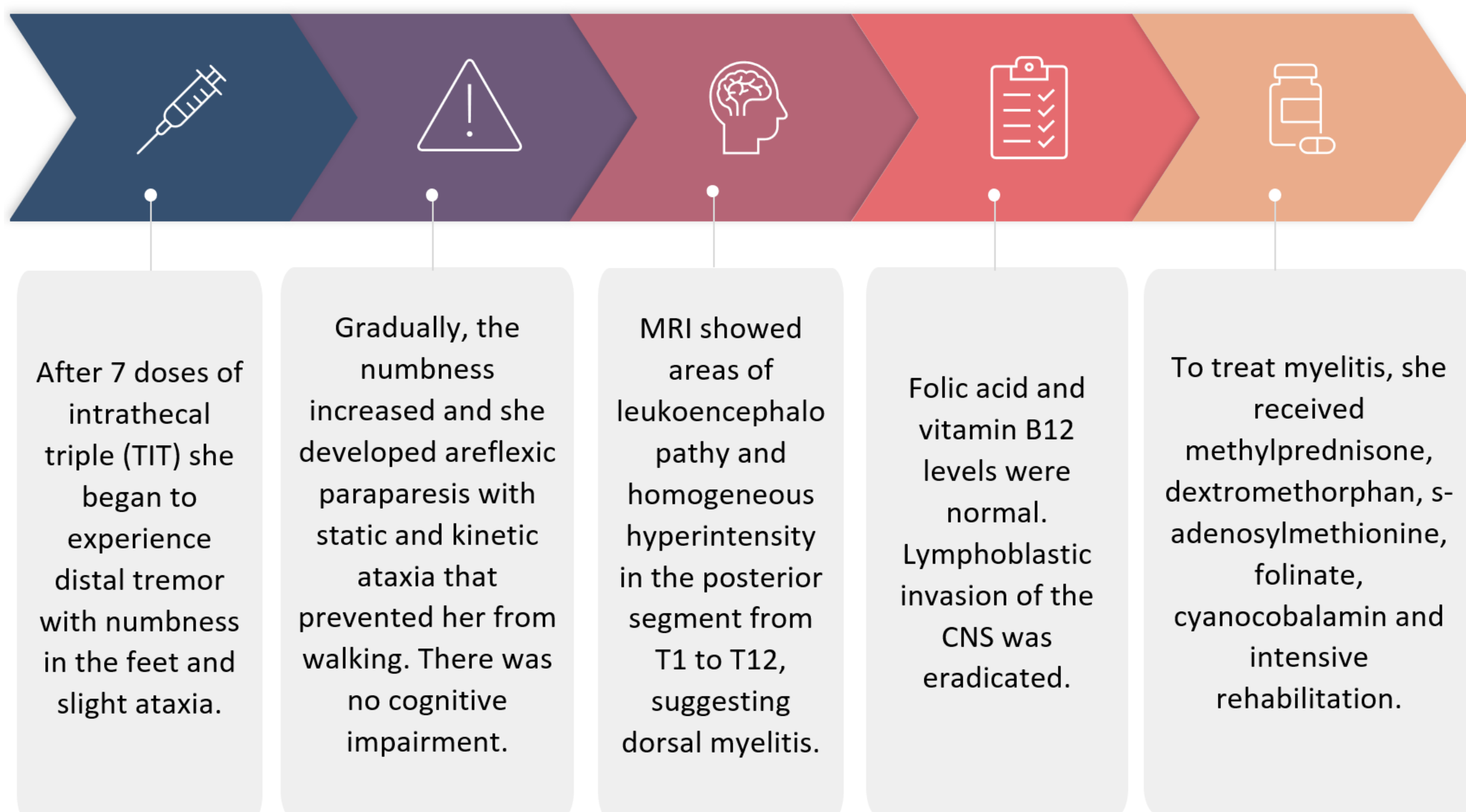
The main symptoms are loss of sensitivity, alteration of motor neurons, root pain, and sphincter incontinence.

Aim and objectives

We present a clinical case of a Caucasian girl with precursor B-cell lymphoblastic lymphoma, stage IV, that affects the central nervous system (CNS) type 3.

She presented **neurotoxicity** after administration of **intrathecal MTX**. She received treatment under EURO-LB02 protocol.

Material and methods



Due to the patient's clinic, we analyzed **22 single nucleotide polymorphisms (SNPs)** associated with the MTX metabolic pathway by TaqMan real-time PCR.



Results

Ten altered SNPs were found, mainly in genes encoding transport proteins (*ABCB1* and *ABCG2*) and enzymes in the folate pathway (*MTHFR*)

These SNPs could explain the toxicity manifested. However, there is a low level of evidence to support it.

During subsequent cycles of chemotherapy, MTX was discontinued from TIT and intravenous MTX was gradually titrated to full doses.

Currently, the patient is in reinduction phase and has shown partial recovery from myelitis.

She was rescued with leucovorin after intravenous MTX and the levels of MTX were always in the normal range without notable toxicity.

Conclusion and relevance

MTX may cause spinal cord dysfunction in children, especially when the intrathecal route is used. SNPs in enzymes involved in pharmacokinetics and pharmacodynamics may be the cause. However, more studies are needed to confirm these findings and transform them into information applicable in clinical practice.



References

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