

IMPACT OF AN INTENSIVE MONITORING PROGRAM ON METHOTREXATE ELIMINATION

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Abstract n.:4CPS-234

BACKGROUND AND IMPORTANCE

High-dose methotrexate (hDMTX) can cause significant toxicities, especially renal ones. **Adequate patient management** is essential to prevent them and reduce hospital stay.

AIM AND OBJECTIVES

To determine if the implementation of an **intensive monitoring program (IMP)** of **MTX concentrations ([MTX])** and **supporting measures** did improve the methotrexate clearance in comparison with a **standard monitoring program (SMP)** in patients with haematological malignancies.

MATERIAL AND METHODS

Retrospective observational study → patients admitted to a haematology ward between January 2020-September 2021, all treated at hDMTX (≥ 500 mg/m²)

TWO GROUPS

Standard monitoring program (SMP)

- Daily pH monitoring
- Pharmacokinetic monitoring **48h** after starting infusion and every 24h until **[MTX]<0.2 μ M**

Intensive monitoring program (IMP)

- **6 hourly** pH monitoring
- Pharmacokinetic monitoring at **12, 23, 36 and 42h** after starting infusion. Then, individualized monitoring based on **Bayesian estimation** of MTX clearance and volume of distribution until **[MTX]<0.2 μ M**

VARIABLES

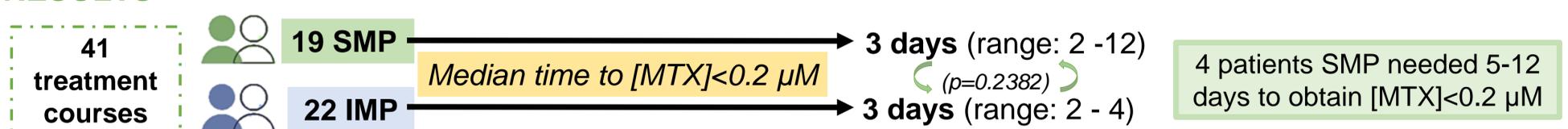
- **Demographic** (sex, age, Body Surface Area)
- **Diagnosis**
- **Treatment variables:** total dose of MTX, time (days) to [MTX]<0.2 μ M from start of infusion (principal variable)
- Basal and final serum **creatinine**

Statistical analysis

STATA 17.1

Mann-Whitney test (principal variable)
Descriptive statistics

RESULTS



VARIABLE \pm SD	SMP	IMP
Sex (count)	12 female,7 male	8 female,14 male
Age (years)	50.89 \pm 13.28	63.45 \pm 6.79
Body surface area (m ²)	1.67 \pm 0.16	1.72 \pm 0.13
Diagnosis* (count)	7 ALLB,9 NHL,3 ALLT	2 ALLB,16 NHL,4 PCL
Total dose (mg)	3130.7 \pm 2063	2043.4 \pm 2247.3
Basal Serum Creatinine (mg/dL)	1.01 \pm 0.78	0.77 \pm 0.19
Final Serum Creatinine (mg/dL)	0.8 \pm 0.35	0.78 \pm 0.24

*:B-cell Acute lymphoblastic leukemia (ALLB), T-cell Acute lymphoblastic leukemia (ALLT), Non-Hodgkin lymphoma (NHL), Primary Cerebral Lymphoma (PCL)

CONCLUSION AND RELEVANCE

Although no statistically relevant signification was determined comparing both groups, a **narrower range** in the median of MTX clearance was observed in the **IMP group**. Thus, early MTX monitoring could possibly result in faster MTX elimination and lower length of hospital stay.