IMPACT OF AN INTENSIVE MONITORING PROGRAM ON METHOTREXATE ELIMINATION

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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 µM**

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 µM**

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

Statistical analysis → **STATA 17.1**
Mann-Whitney test (principal variable)
Descriptive statistics

RESULTS

41 treatment courses

19 SMP → **3 days** (range: 2 -12)

Median time to [MTX]<0.2 µM

(p=0.2382)

22 IMP → **3 days** (range: 2 - 4)

4 patients SMP needed 5-12 days to obtain [MTX]<0.2 µM

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