

SUBLINGUAL ADMINISTRATION OF TACROLIMUS IN LIVER TRANSPLANT PATIENT WITH INTESTINAL MALABSORPTION: A CASE REPORT

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1. BACKGROUND AND IMPORTANCE

A combination of a calcineurin inhibitor with an antimetabolite and corticosteroids is the standard immunosuppression regime after liver transplant. **Therapeutic drug monitoring (TDM)** is recommended for **tacrolimus** due to its narrow therapeutic margin in order to avoid transplant rejection.

2. AIM AND OBJECTIVES

To report a case of a liver-transplant patient that required **sublingual tacrolimus** owing to **intestinal malabsorption** to reach therapeutic levels.

3. MATERIAL AND METHODS

1. Patient presentation

A 37-year-old woman with the following history was admitted to our center in January 2023:

- Obesity
- **Bariatric surgery** (gastric bypass with union of ileum to stomach)

2. Follow-up

- **Sustained sub-therapeutic tacrolimus concentrations** were presented (target trough concentrations for the first 4 weeks post-transplant: 6-10 ng/mL) (Figure 1A)
- Elevated levels of transaminases (Figure 1B)

3. Plan

Given the suspicion of **tacrolimus malabsorption** due to her history of **bariatric surgery**, Pharmacy Service proposed switching to immediate-release tacrolimus capsules and **sublingual administration** with a **1:2 sublingual-oral ratio**.

Diagnosis: Fulminant liver failure

Treatment:

- Liver transplant
- **Prolonged-release tacrolimus tablets**
- IV Mycophenolate mofetil
- IV Methylprednisolone

Diagnosis: Type II acute rejection

RE-TRANSPLANTED
(FEBRUARY 2023)

4. RESULTS

- 3 mg/12 hours sublingual tacrolimus was started (previous prolonged-release tacrolimus dose: 12 mg/day) with subsequent adjustment according to TDM results.
- Capsules content was deposited under patient's tongue, avoiding swallowing for 15 minutes and drinking liquids for 30 minutes.
- **Sustained therapeutic levels of tacrolimus were reached** (Figure 2A) and a progressive decrease in transaminases was observed until reaching normal range values (Figure 2B).

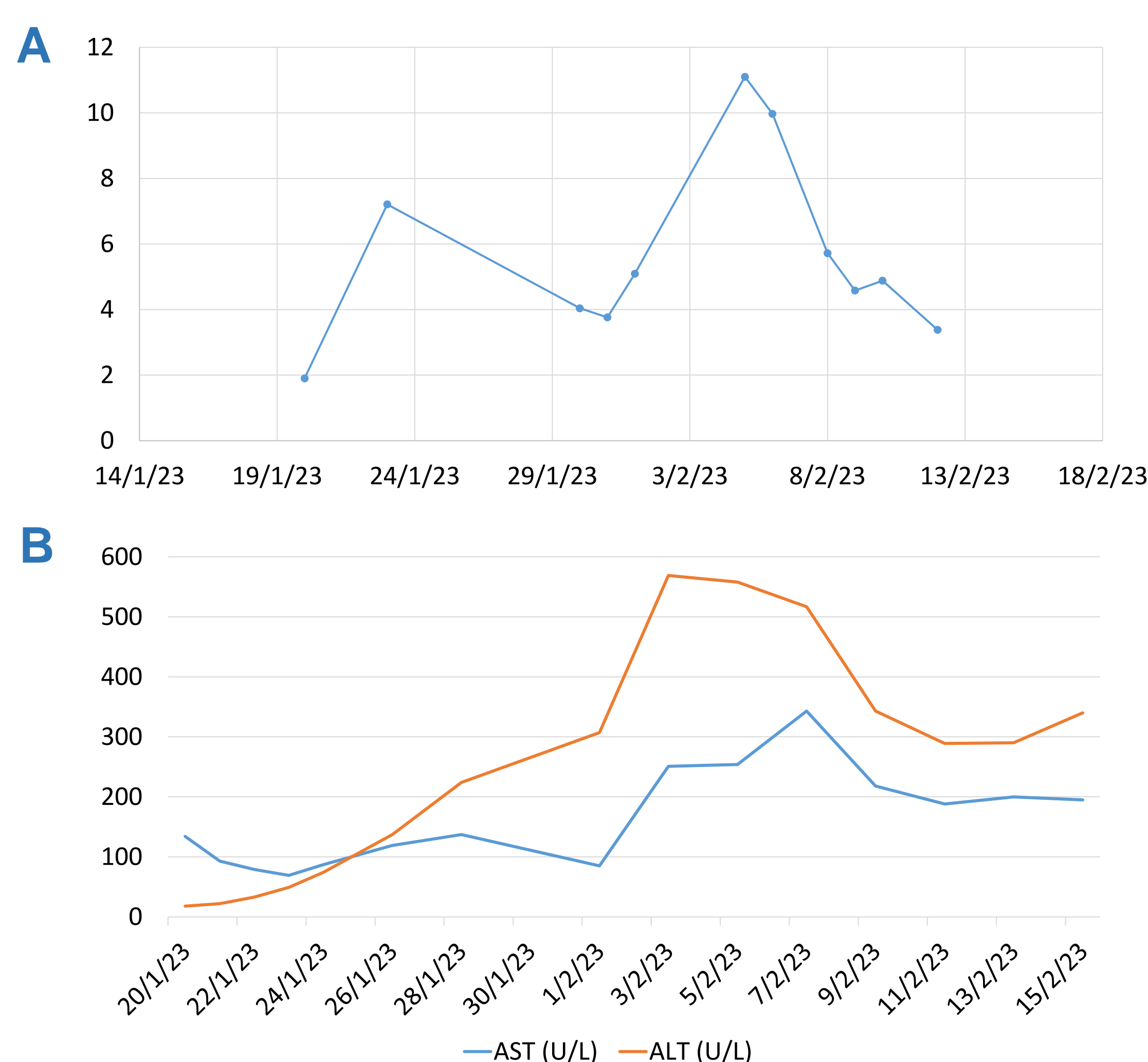


Figure 1. A) Tacrolimus trough concentrations (ng/mL) and B) transaminase levels (U/L) after first liver transplant.

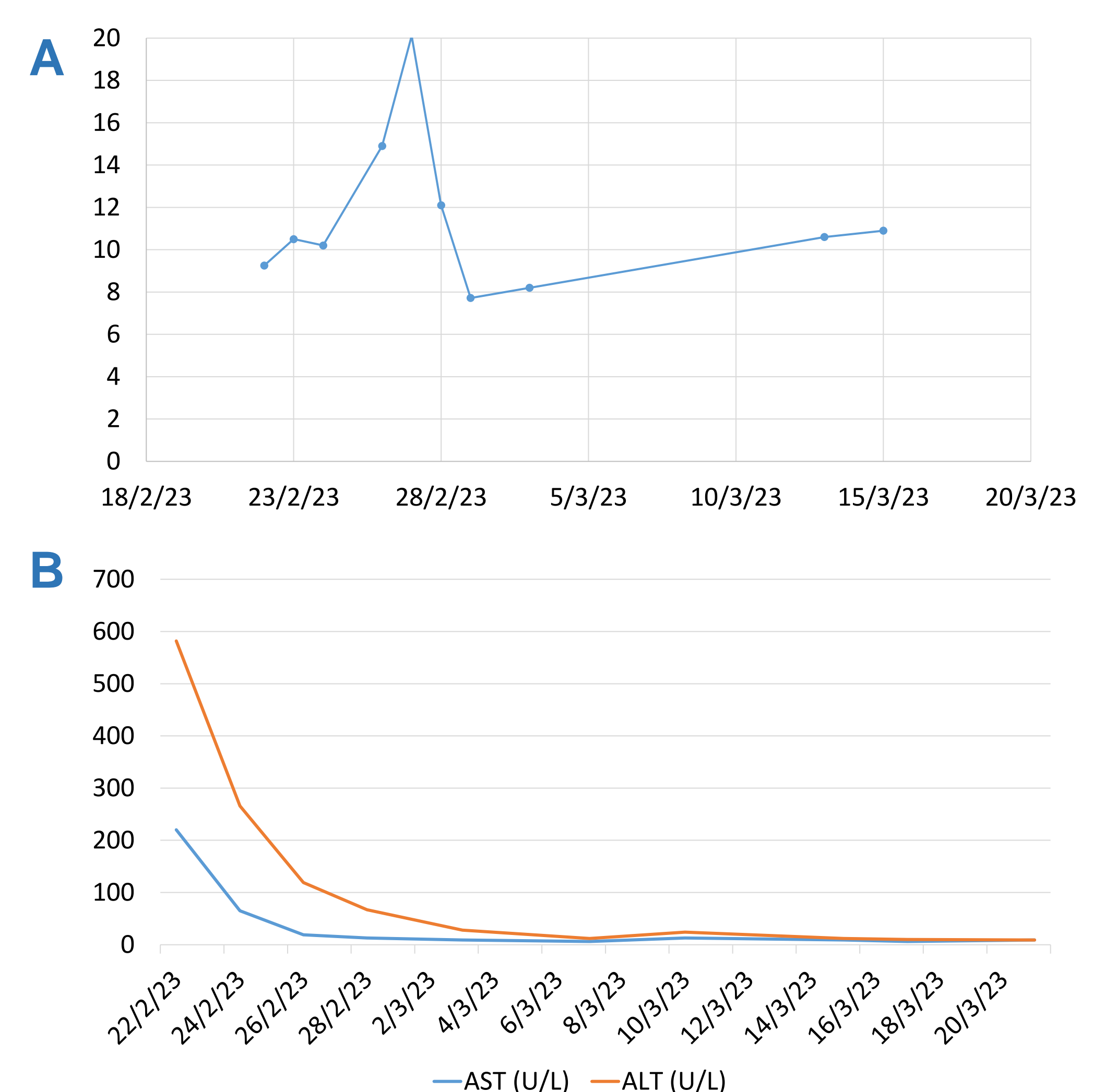


Figure 2. A) Tacrolimus trough concentrations (ng/mL) and B) transaminase levels (U/L) after liver retransplant.

5. CONCLUSION AND RELEVANCE

Sublingual administration of **tacrolimus** could be a feasible strategy to reach therapeutic levels in patients with **intestinal malabsorption** and avoid possible rejections.

