**JIB 2300086**

# Prognostic value of plasma oxylipins profile in ischemic stroke

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JIB 66e ÉDITION JOURNÉES DE L'INNOVATION EN BIOLOGIE
LA BIOLOGIE AU SERVICE DU PROGRÈS MÉDICAL

## BACKGROUND AND AIMS

Ischemic stroke (IS) is a devastating brain injury. Regulation of cerebral post-ischemic inflammation could attenuate neuronal injury and enhance neural repair. Oxylipins (OxLs) have major roles in inflammation, anti-inflammation, and neuroprotection. In this study, we tested whether plasma OxLs are relevant for **short-term outcomes** in IS patients.

## SUBJECTS AND METHODS

- Forty-one patients with IS were **followed for 7 days**,
- **NIH Stroke Scale (NHISS) score** at admission and 72 hours after and data on **within-one-week mortality** were collected**.**
- **Early neurologic recovery (ENR)** was defined as ≤ 2 points decrease in NHISS score at 72 hours.
- Selected OxLs were quantified in plasma using a **targeted LC-MS/MS method.**
- **Volcano plot analyses** [FC>1.5] determined which OxLs are associated with **ENR** or **intra-hospital mortality (IHM).**
- **ROC curve analysis and multivariate Cox-hazard model** applied to test the association of different metabolites with **IHM.**

## RESULTS

- Volcano plot analysis identified 3 OxLs associated with ENR and 2 OxLs associated with intra-hospital mortality.
- **Patients** with **ENR** showed **lower PGE2 (FC= 0.28)** and **TXB2 (FC= 0.50)** and **higher 7,17-diOH-DPA (FC= 2)** levels.
- **Patients** who **died within one week** showed **lower LXB4 (FC= 0.62)** and **higher LTE4 (FC=1.55)**.

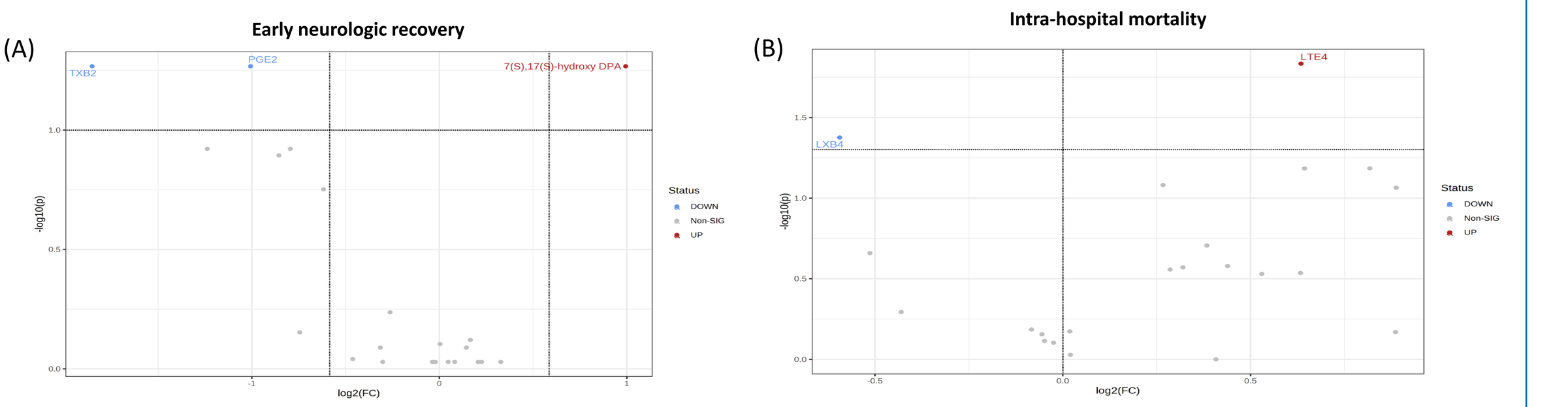


**Fig. 1.** Volcano plot analysis for the identification of oxylipins related to early neurologic recovery (A) and intra-hospital mortality (B) in IS patients

- ROC curve analyses repaired cut-off values for mortality at 1.15 pg/mL for LXB4 and 10 pg/mL for LTE4.
- Based on these thresholds, only low plasma LXB4 levels were associated with IHM [**multi-adjusted HR,7.51 (1.41-40.7)**].

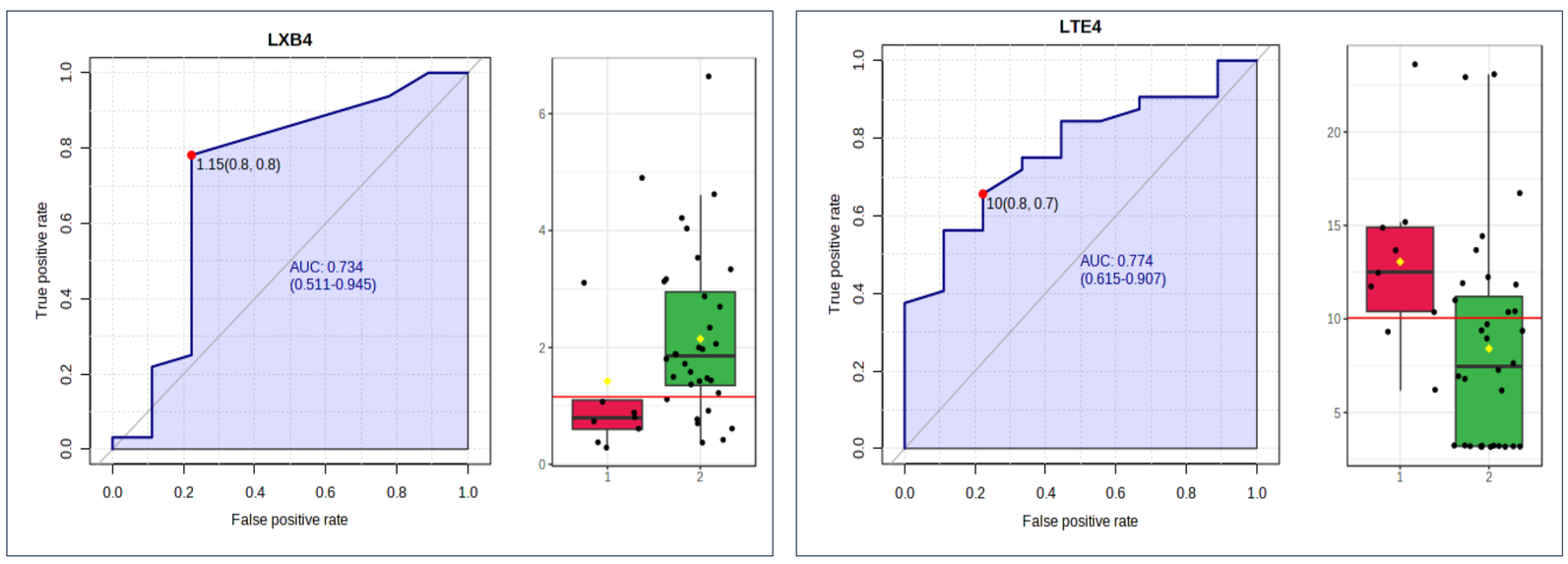


**Fig. 2.** Receiver operating characteristic (ROC) curves for plasma LXB4 and LTE4 as a function of IHM in IS patients.

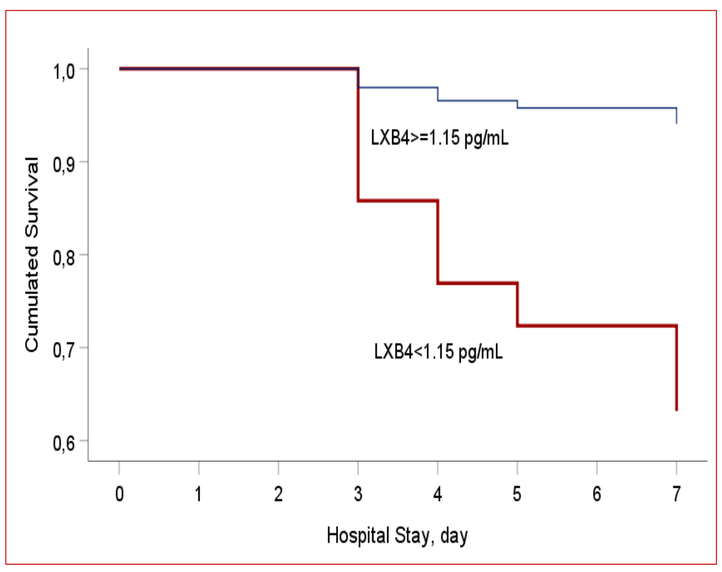


**Fig. 3.** Multivariate Cox model survival curves for IHM in IS patients by plasma LXB4

## CONCLUSIONS

Lower levels of the pro-resolving oxylipins **7,17-dihydroxy-DPA** and **LXB4** are associated with **poor outcomes** in IS patients. This data suggest that defective resolution pathways increase the risk of aggravation in IS patients. Future research should verify whether enhancing resolution capacities contribute to improving the outcome in IS patients.