Gastrointestinal injury, dysfunction and complications after F/BEVAR

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Background

Gastrointestinal (GI) complications after F/BEVAR are associated with worse outcome. Intestinal fatty acid-binding protein (I-FABP) has been suggested as a possible biomarker for GI complications, and acute gastrointestinal injury (AGI) grade might be useful for evaluating GI function during postoperative care.

Aim

To investigate the association between I-FABP, AGI grade, and gastrointestinal complication after F/BEVAR.

Material and method

A total of 17 patients undergoing F/BEVAR for thoracoabdominal, juxtarenal, suprarenal or pararenal aneurysm between May 2017 and September 2018 were included. Plasma samples were collected preoperatively and during postoperative intensive care. Plasma samples were analyzed for I-FABP with enzyme-linked immunosorbent assay. GI function was assessed using AGI grade daily during postoperative intensive care.

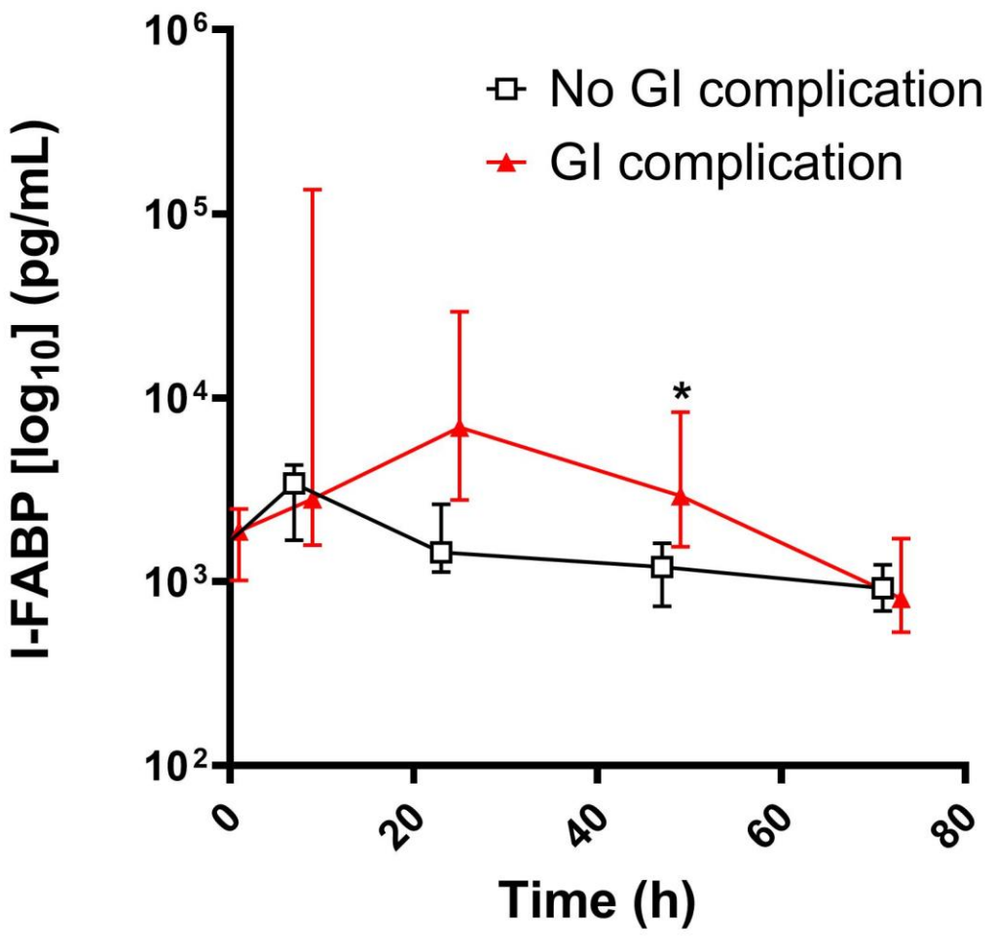

Figure 1: Plasma concentrations of I-FABP over time, comparing those patients with at least one GI complication (n=5) and those without GI complication (n=12). *: p<0.05 at 48 h.

Results

Patients who developed a GI complication within 90 days postoperatively had higher concentrations of I-FABP at 48 h (p=0.019, ***Fig 1***) as well as a higher overall AGI grade than those who did not develop a GI complication (p<0.001). Higher concentrations of I-FABP at 24 h and 48 h correlated to higher AGI grade on postoperative days 1, 2 and 3 (p=0.032 and p=0.048, p=0.040 and p=0.018, and p=0.012 and p=0.016, respectively). At the time of transition from AGI 1 to AGI ≥ 2, the I-FABP concentrations were significantly higher in patients transitioning to AGI ≥ 2 compared to the 48 h levels for patients who remained at AGI 1 (p=0.021, ***Fig 2a***). The highest plasma concentrations of I-FABP prior to diagnosis of a GI complication were significantly higher compared to the 48 h levels postoperatively in patients without a GI complication (p=0.040, ***Fig 2b***). Patients developing GI dysfunction (AGI grade ≥2) had a higher frequency of complications (p=0.009) and longer length of stay in the intensive care unit (p=0.008).

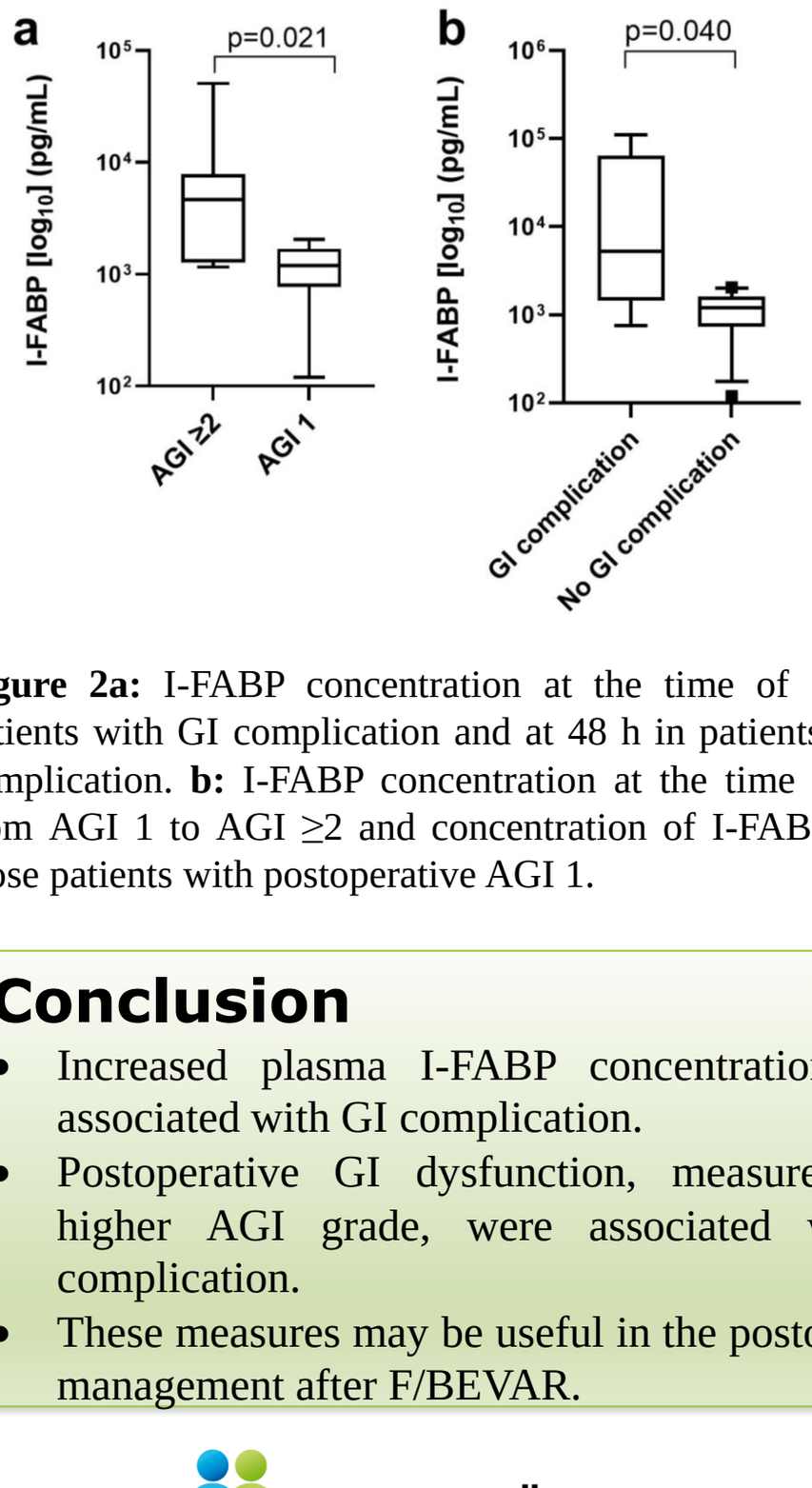

Figure 2a: I-FABP concentration at the time of diagnosis in patients with GI complication and at 48 h in patients without GI complication. **b:** I-FABP concentration at the time of transition from AGI 1 to AGI ≥2 and concentration of I-FABP at 48 h in those patients with postoperative AGI 1.

Conclusion

- Increased plasma I-FABP concentrations were associated with GI complication.
- Postoperative GI dysfunction, measured as a higher AGI grade, were associated with GI complication.
- These measures may be useful in the postoperative management after F/BEVAR.

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