Intraoperative fluid administration and post-operative pulmonary complications in minimally invasive esophagectomy in prone position.

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Argomento: Anestesia generale

Background

Esophagectomy is a high-risk major surgery with post-operative complications up to 60% of cases. Postoperative pulmonary complications (PPCs) are the most frequent followed by surgical and cardiovascular ones[1-2].

Judicious fluid management is a key component of perioperative anesthesia during major surgery because either hypervolemia or hypovolemia could be associated with increased morbidity.

The aim of this study was to evaluate the relationship between intraoperative fluid amount and rate of complications in patients who underwent elective minimally invasive esophagectomy (MIE) in prone position without one lung ventilation (OLV).

Materials

We enrolled 52 patients underwent MIE from January 2015 to December 2017.

We collected and compared their demographic data, amount of intraoperative fluids administered, intensive care unit (ICU) and hospital length of stay (LOS), presence and type of postoperative complications.

Results

Main results are shown in table 1.

Surgery time was 263±45 minutes. Fluids didn't influence the first P_aO_2/F_IO_2ratio (r=0.048, p=0.75) nor the first lactate level (r=0.059, p=0.69) at ICU admission.

No correlation between amount of fluids and pulmonary, cardiovascular, surgical complications was found.

Fluids did not influence the length of ICU (r=0.11, p=0.43) and hospital stay (r=0.07, p=0.64).

ICU and hospital LOS were influenced by the presence of any complication (respectively p=0.008 and p<0.001), with PPCs leading to increased ICU LOS (p=0.048) while surgical complications better

related to hospital LOS ($p<0.001$).

Conclusions

We didn’t find a correlation between pulmonary, cardiovascular, surgical complications and total amount of fluids administered during MIE.

In spite of the relatively high intra-operative fluid load, no correlation was found with post-operative complications. We consider that mini-invasive esophagectomy in prone positioning without OLV induces low systemic response to surgical trauma that probably counterbalances unwanted adverse effects of a generous fluid administration strategy.

References

[1] Curr Opin Anaesthesiol.2017 Feb;30(1):30-35

[2] Anesthesiol Clin.2015 Mar;33(1):143-63

	No complications **25 (48%)**	***Any complication*** **27 (52%)**	***p-value***	***PPCs*** **17 (32.7%)**	***Surgical Complications*** **8 (15.4%)**	***CV Complications*** **12 (23%)**	***Complications > 1*** **8 (15.4%)**
Fluidic volume (mL/Kg/h)	11.8 (± 4.3)	10.9 (± 4.2)	*0.20*	11.0 (± 4.4)	11.4 (± 2.7)	10.1 (± 3.8)	10.4 (± 3.5)
ICU LOS (days)	1.8 (± 0.9)	9.5 (± 15.2)	*0.008*	13.0 (±17.8) *[1] ***p=0.048***	3.4 (± 3.3)	5.1 (± 6.6)	6.6 (± 7.6)
Hospital LOS (days)	11.9 (± 2.5)	29 (± 18)	***<0.001***	30.5 (±19.3)	46.5 (± 15.2) *[2] ***p < 0.001***	25.4 (± 19.1)	31.9 (± 20.9)

Table 1: Main results of the study.
Legend
PPCs: Postoperative Pulmonary Complications; CV complications: cardiovascular complications; ICU: Intensive Care Unit; LOS: Length of Stay; Complications > 1: patients who experienced more than one complication.
*[1]Comparison between ICU LOS of patients with PPCs and patients with other type of complications.
*[2]Comparison between hospital LOS of patients with surgical complications and patients with other type of complications.