SEVOFLURANE, NOT PROPOFOL, DURING LUNG RESECTION SURGERY REDUCES THE INCIDENCE OF POSTOPERATIVE PULMONARY COMPLICATIONS. A RANDOMIZED CONTROLLED TRIAL.

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BACKGROUND

- Recent studies report the immunomodulatory role of halogenated anesthetics during lung resection surgery (LRS) but fail to investigate differences in clinical practice with respect to prognosis.
- The main goal of the present study was to compare the effect of sevoflurane and propofol on the incidence of postoperative pulmonary complications (PPCs) in patients undergoing LRS.
- The difference in lung and systemic inflammatory response was the secondary objective.

MATERIALS AND METHODS

- We designed a randomized controlled trial (NCT 02168751; EudraCT 2011-002294-29), approved by the local ethics committee. We included 180 patients undergoing LRS.
- All of the patients fulfilled the inclusion criteria. Patients were randomized to two groups depending on the anesthetic used (propofol or sevoflurane). The patients were managed with the same anesthetic protocol.
- Fiberoptic bronchoalveolar lavage (BAL) was performed in both lungs for analysis of inflammatory markers. Arterial blood was drawn for measurement of respiratory gases and the same inflammatory markers analyzed in BAL.
- Release of inflammatory markers was measured using Western Blot. The *t* test and the chi-square test were used for the statistical analysis.
- We recorded postoperative care unit stay, hospital stay, mortality during the 1st month and year, and PPCs classified following the definition applied in the ARISCAT study.

TLV	OLV: PROTECTIVE LUNG VENTILATION
VCV. TV 8 ml/kg (ideal weight) PEEP 5 cm H ₂ O FIO ₂ 0.4-0.5 RF to maintain EtCO ₂ 30-35 mmHg	VCV. TV 6 ml/kg (ideal weight) PEEP 5 cm H ₂ O FIO ₂ to maintain SaO ₂ > 90% Permissive hypercapnia

RESULTS AND DISCUSSION

- Expression of lung and systemic proinflammatory cytokines were more pronounced and 1styear mortality was higher in the propofol group than in the sevoflurane group ($p < 0.05$).
- Pulmonary and systemic release of the anti-inflammatory cytokine IL-10 was less pronounced in the propofol group ($p < 0.05$). More PPCs were detected in the propofol group (28.4% vs 14%, OR 2.44 [95% CI, 1.14-5.26]).

	PROPOFOL	SEVOFLURANE	P
	Mean (SD)[%]	Mean (SD) [%]	
Hospital stay (days)	8.5 (7)	8.6 (12)	0.988
Critical care unit stay (h)	35.1 (81)	49.5 (191)	0.516
PaO2/FiO2 18h PO	374 (105)	407 (106)	0.044
PPC	25 [28.4%]	12 [14%]	0.020
Kidney failure	8 [9.1%]	4 [4.7%]	0.25
Postoperative PO cardiac complications	7 [8%]	8 [9.3%]	0.75
30 days Mortality	3 [3.4%]	0 [0%]	0.081
1 st year Mortality	12 [13.6%]	2 [2.3%]	0.006

CONCLUSIONS

- Our results suggest sevoflurane during LRS reduces the frequency of PPCs owing to its immunomodulatory role in the pulmonary and systemic inflammatory responses.