Detection of atelectasis with lung ultrasonography in parturients having normal labour and cesarean section under spinal or general anesthesia

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Background and Goal of Study:

Changes in respiratory system functions in pregnancy can increase the risk of atelectasis and type of anesthesia is of importance (1). In our study, we aimed to determine the development of atelectasis using transthoracic lung ultrasonography (US) in patients planned for cesarean section (CS) either under spinal or general anesthesia, comparing them with a normal delivery group.

Materials and Methods:

Forty-eight 18-40 years old parturients with the ASA II-III group, who underwent informed written and verbal consent for elective CS at the Obstetrics and Gynecology Clinic, were included in the study. Our study had 3 groups: spinal anesthesia in Group S (n=23) and general anesthesia in Group G (n=25) patients had CS, and Group N patients preferred normal vaginal delivery without any labor analgesia. Standart ASA guided monitoring was applied to each patient. Hemodynamic parameters, block level, operative time, visual analog scale pain values were recorded at regular intervals. Transthoracic lung US examination was performed pre- and postpartum. According to USG protocol, 4 images for each of the three thoracic walls (anterior, sides and posterior) were recorded as totally 12 images per US examination. Images were evaluated by two physicians experienced in transthoracic lung US and the lung ultrasound scored (LUS) between 0 (no atelectasis) and 36 (total atelectasis) and recorded as LUS1 (preoperative) and LUS2 (postoperative) values (2).

Table 1. Lung Ultrasound Scores

	LUS 1	LUS 2	P
Group N	3,2±4.2	1.2±1.4	0.03
Group S	4.0±3.0	1.9±2.2	0.03
Group G	3.0±2.9	3.7±3.5	0.40
P	0.665	0.043	

Results and Discussion:

There was no difference between groups in terms of demographic data except age and VAS values. It was observed that LUS2 score increased in general anesthesia group (3.7±3.5) while LUS2 score decreased in spinal anesthesia (1.9±2.2) and normal delivery (1.2±1.4) group (Figure 1). There was a difference between groups in terms of LUS2 caused by the difference between Group N and other groups (p=0.006).

Conclusion:

General anesthesia increases the incidence of postoperative atelectasis in parturients having CS. Early detection of atelectasis may reduce the risk of developing postoperative pulmonary complications, especially in patients with high risk. Lung ultrasonography is a method that can be repeated when necessary and can be available faster than other radiological methods without causing any radiation while it can be easily applied at the bedside, as well.

References:

- 1.Br J Anaesth.2010 Jun;104(6):746-50
- 2.Anesth Analg. 2017 Feb;124(2):494-504