in Neonatology for Life

Curosurf® and beractant evaluation by lung ultrasound in Respiratory Distress Syndrome

Brief summary of:

Evaluation of Different Types of Natural Surfactants by Lung Ultrasound in Respiratory Distress Syndrome

> Davut Bozkaya et al.

Curosurf® and beractant evaluation by lung ultrasound in RDS

Objective: To compare the lung ultrasonography (LUS) scores after two different natural surfactants administration as a parameter reflecting lung inflation.

Study Design: Preterm infants of 32 gestational weeks and below who were diagnosed with respiratory distress syndrome (RDS) were randomly assigned to be administered either poractant alfa or beractant, prospectively. Serial LUS scans were obtained by an experienced neonatologist in a standardized manner before and after (2 and 6 hours) surfactant administration.

The LUS scans were evaluated by protocols based on scores and lung profiles.

Methods:

☑ **Prospective single center study**

☑ **Data collection period:** between March 2018 and January 2019.

☑ **Treatment arms:** poractant alfa 200 mg/kg and beractant 100 mg/kg

☑ **Surfactants administration technique:** InSURE (intubation–surfactant–extubation).

☑ **Surfactant treatment:** infants ≤ 26 weeks' gestation when FiO_2 >0.30;
infants >26 weeks' when FiO_2 requirements >0.40

☑ **LUS examination:**

Each lung was divided into three regions (superior–anterior, inferior–anterior, and lateral).

A score of 0 to 3 was given for each lung region (the total score is between 0 and 18).

LUS scores are assigned as follows:

- **0 point:** A pattern (presence of only A lines, normal lung);
- **1 point:** B pattern (the presence of at least three B lines in each image area recognizes the alveolar fluid);
- **2 points:** severe B pattern (white lung limited to subpleural consolidation and defined RDS);
- **3 points:** contains extensive consolidations and air bronchograms.

Right — Upper anterior — Lateral — Lower anterior
Left — Upper anterior — Lower anterior — Lateral
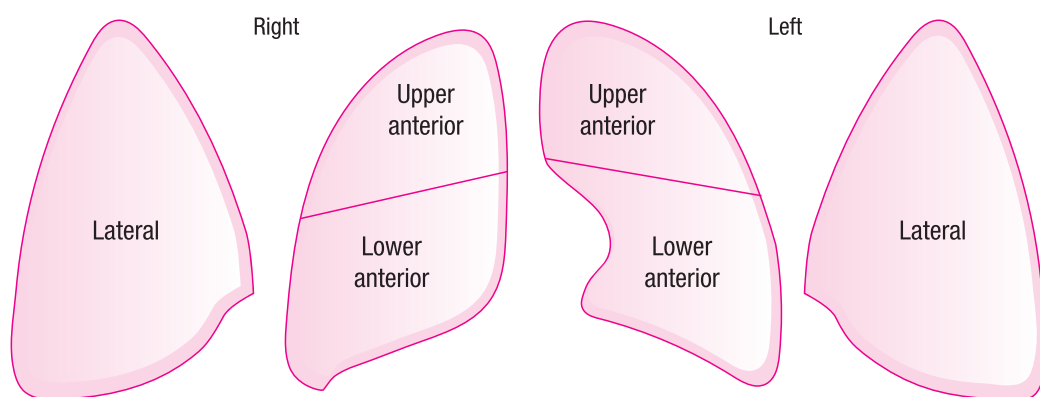
Description of the lung ultrasonography score system.

Adapted from Bozkaya et al. 2019

LUS scans were evaluated by a neonatologist and radiologist unaware of the infants' clinical condition.

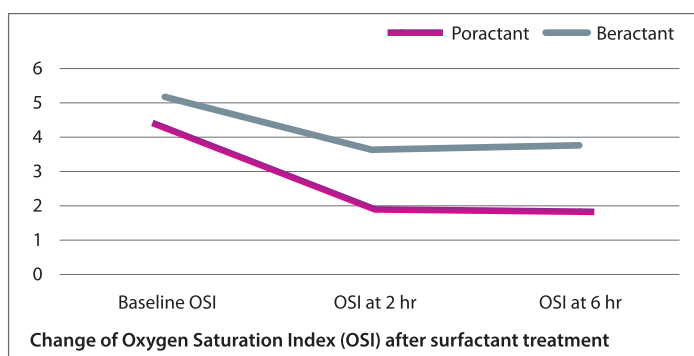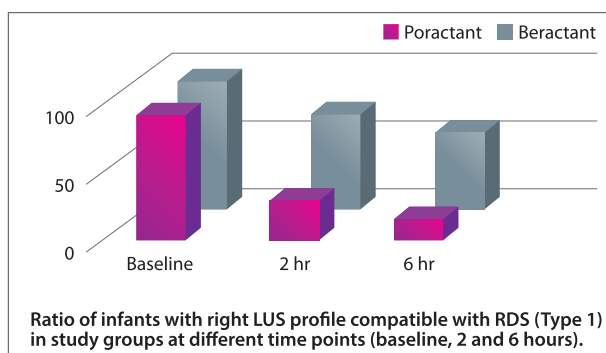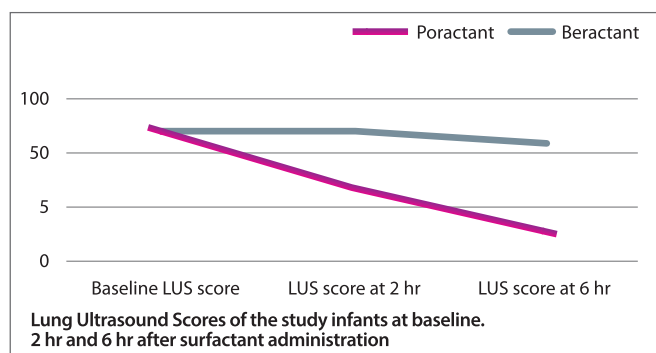# Curosurf® and beractant evaluation by lung ultrasound in RDS

Results:

37 infants received poractant alfa and 36 received beractant. The baseline characteristics and pre-surfactant LUS scores were similar in groups.

The scores were significantly decreased after surfactant administration in both groups (2 hours, $p \leq 0.001$; 6 hours, $p \leq 0.001$).

LUS scores in poractant group were significantly lower than beractant group when compared at each time point. **At the end of 6 hours, the number of infants with the normal profile was significantly higher in the poractant group (65%) than the beractant group (22%).**

Median baseline LUS scores in both groups were 12 before surfactant administration. The scores were significantly decreased 2 and 6 hours after surfactant administration both in poractant and beractant groups (2 hours, $p \leq 0.001$; 6 hours, $p \leq 0.001$)

When scores were compared between groups at both time points, **poractant alfa group had significantly lower scores than beractant group**

Lung Ultrasound Scores of the study infants at baseline. 2 hr and 6 hr after surfactant administration

Ratio of infants with right LUS profile compatible with RDS (Type 1) in study groups at different time points (baseline, 2 and 6 hours).

Change of Oxygen Saturation Index (OSI) after surfactant treatment

Adapted from Bozkaya et al. 2019

Lung ultrasound scores, lung profiles, and OSI of the study infants at baseline, 2 and 6 hours after surfactant administration. OSI, oxygen saturation index.

CONCLUSION:

☑ **LUS is beneficial for evaluating lung aeration after surfactant treatment in preterm infants with RDS.**

☑ **A better lung aeration can be achieved in the early period with the use of poractant alfa.**

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Poractant Alfa   *(80 mg/ml)*

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