Novel minimally invasive technique for whole lung lavage

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Background

Pulmonary Alveolar Proteinosis (PAP) is characterized by alveolar accumulation of surfactant. Whole lung lavage (WLL) is the standard treatment but there are no guidelines standardizing the procedure.

Case Report

A 29-year-old female diagnosed with autoimmune PAP was referred to our clinic due to progressive respiratory failure for WLL. At presentation she was hypoxic requiring 10 lpm supplemental oxygen.

After informed consent the patient was intubated with a single lumen endotracheal tube (ET). She was conventionally mechanically ventilated in a supine position. Through a side port of the ET, each segmental lobe of the left lung was sequentially blocked with a bronchoscope connected to a sterile single use Pulse Lavage device. The Pulse Lavage can administer steady pressurized pulsed solution, has a suction adaptor and built in battery pack, its fully disposable and designed for use in orthopaedic surgical procedures.

Every segmental lobe was repeatedly washed (4-5 cycles) for 8-10 seconds with slow installation of 150-200 ml warmed saline. The fluid of every cycle was subsequently drained through the device. A total of 5,6 litres were administered with 4,8 litres return. Directly afterwards the patient was extubated and transferred to the ward.

The procedure during the right lung lavage was better standardized and better tolerated due to the improved lung function three weeks after the first session. In two hours a total of 9 litres were administrated with 8.85 litres return.

Three weeks after the second lung lavage, at the follow up visit, the saturation was normal (97%). Pulmonary Function tests were significantly improved: Forced Vital Capacity by 25,8% Total Lung Capacity by 20,8% and Diffusion by 10,5%.

CONCLUSION

We propose a less invasive technique with no need for double lumen intubation and lung isolation, with controlled and homogenous lavage, with less installed and residual fluid, no need for positioning, physiotherapy or vest, fast extubation, no prolonged mechanical ventilation and less procedural time.

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