

ANALYSIS OF DEPOSITION RADIOAEROSOL NEBULIZERS MEMBRANE IN HEALTHY SUBJECTS

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Introduction

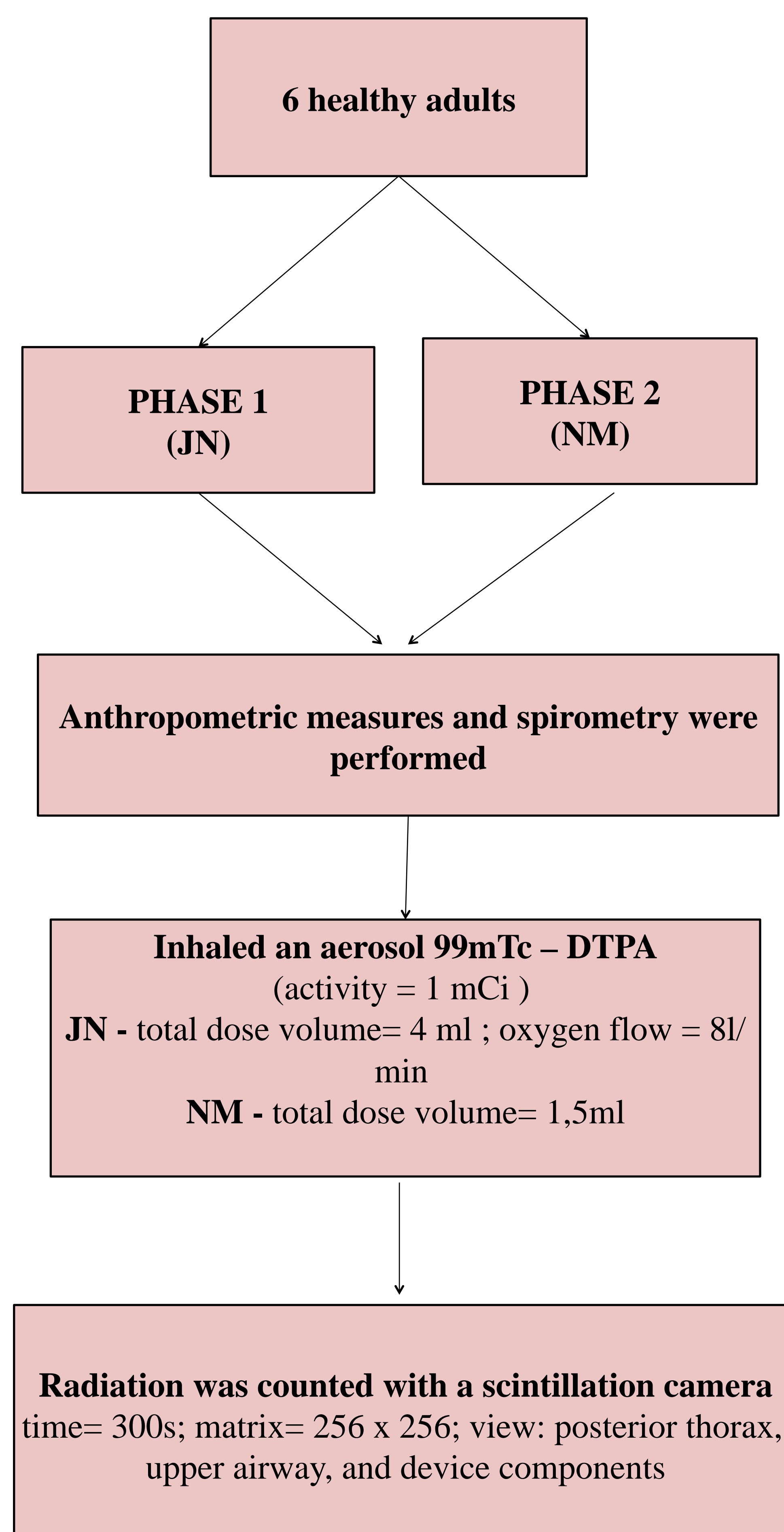
Nebulizers membrane (NM)
 ↓ Residual volume
 ↑ Twice aerosol deposition compared with other types of nebulizers such as jet nebulizers (JN)
 ↓
 There are many studies on animal, models and *in vitro*.
 ↓
In vivo results and studies about deposition with NM – lack of information

Aim

The aim of this study was to compare radioaerosol deposition using NM and JN in healthy subjects, using 2-D planar scintigraphy.

Methods

- Randomized and Crossover study.



Methods

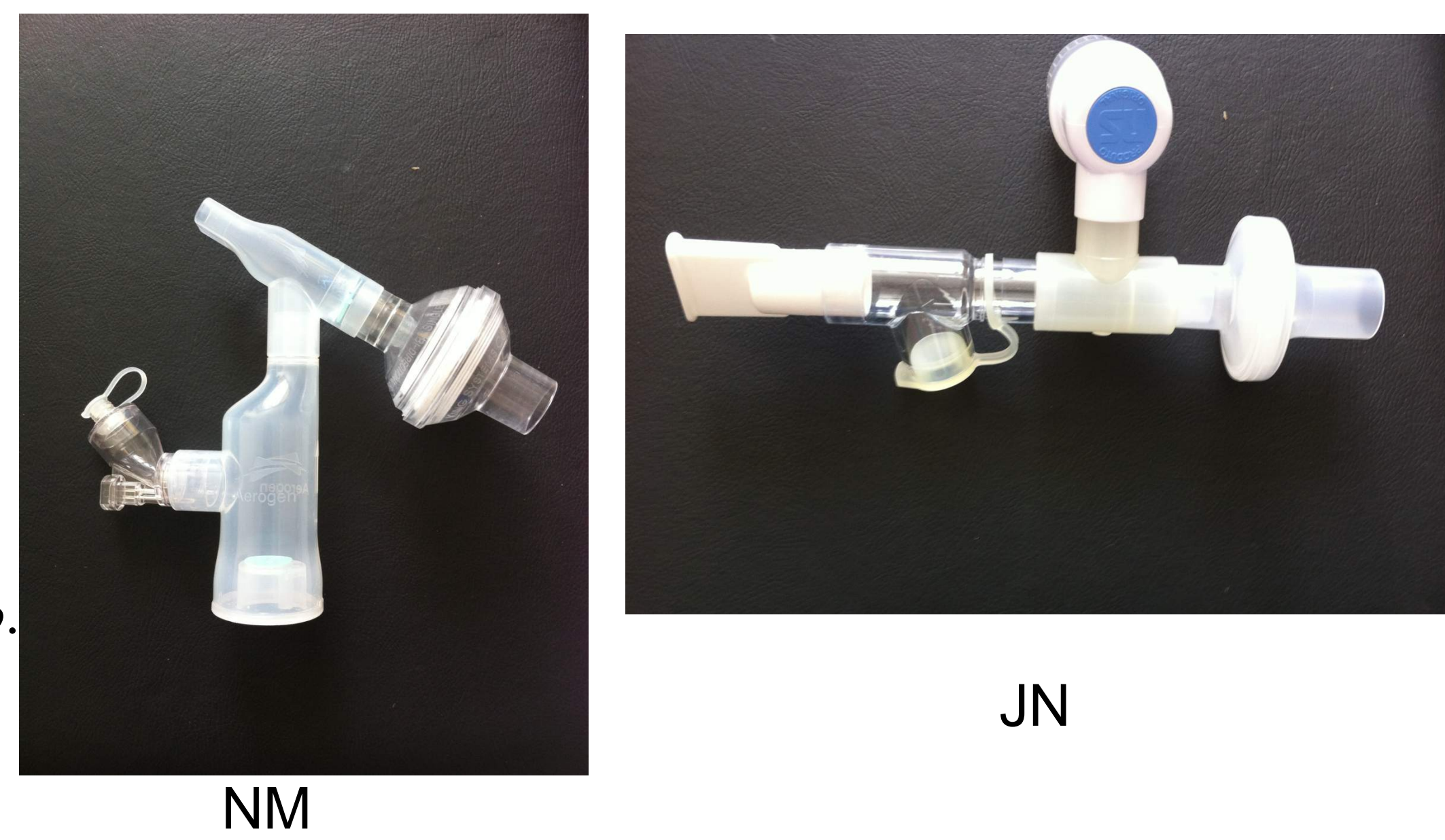


Figure 1. Visual representation of the circuit

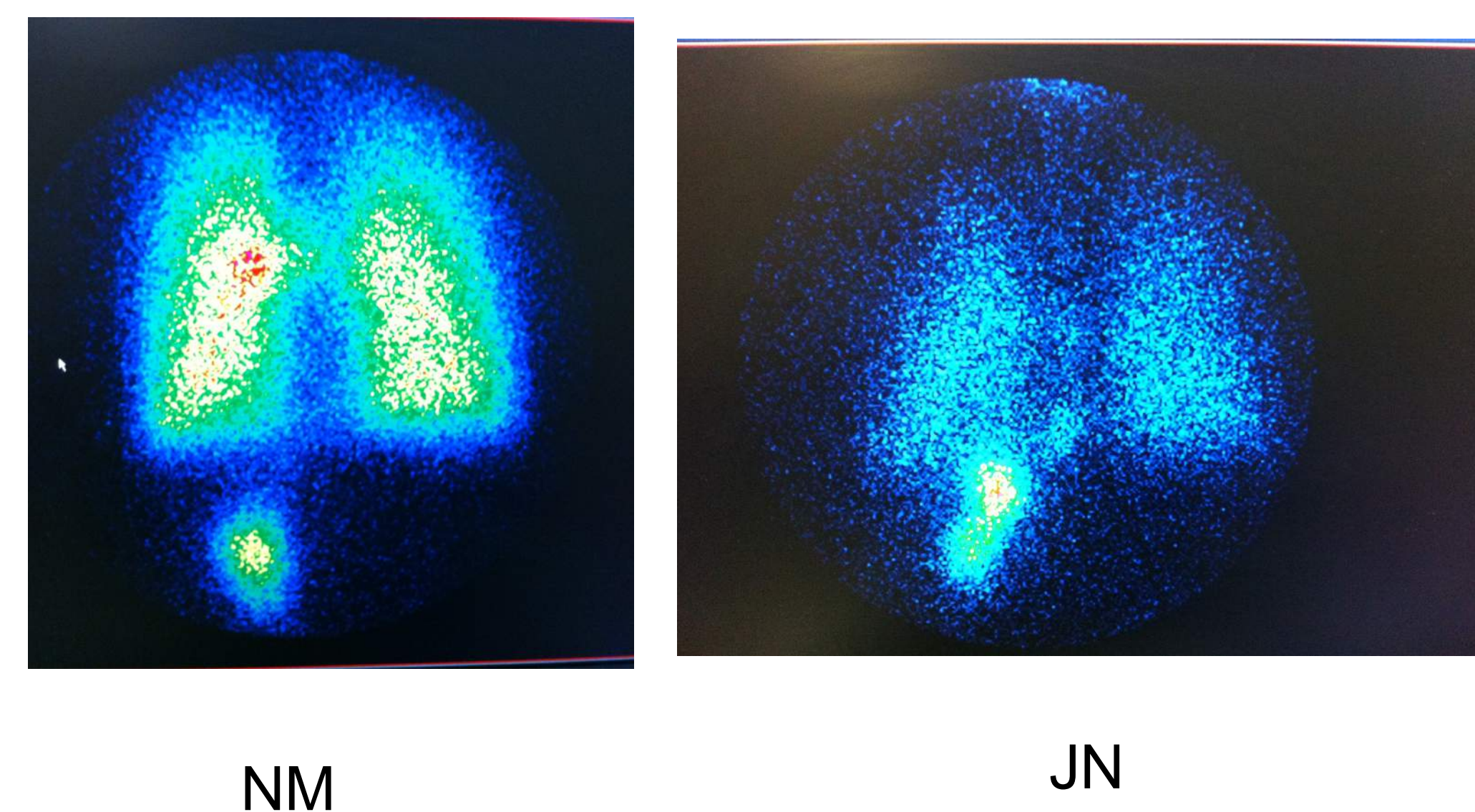


Figure 2. Lung deposition in both phases.

Results

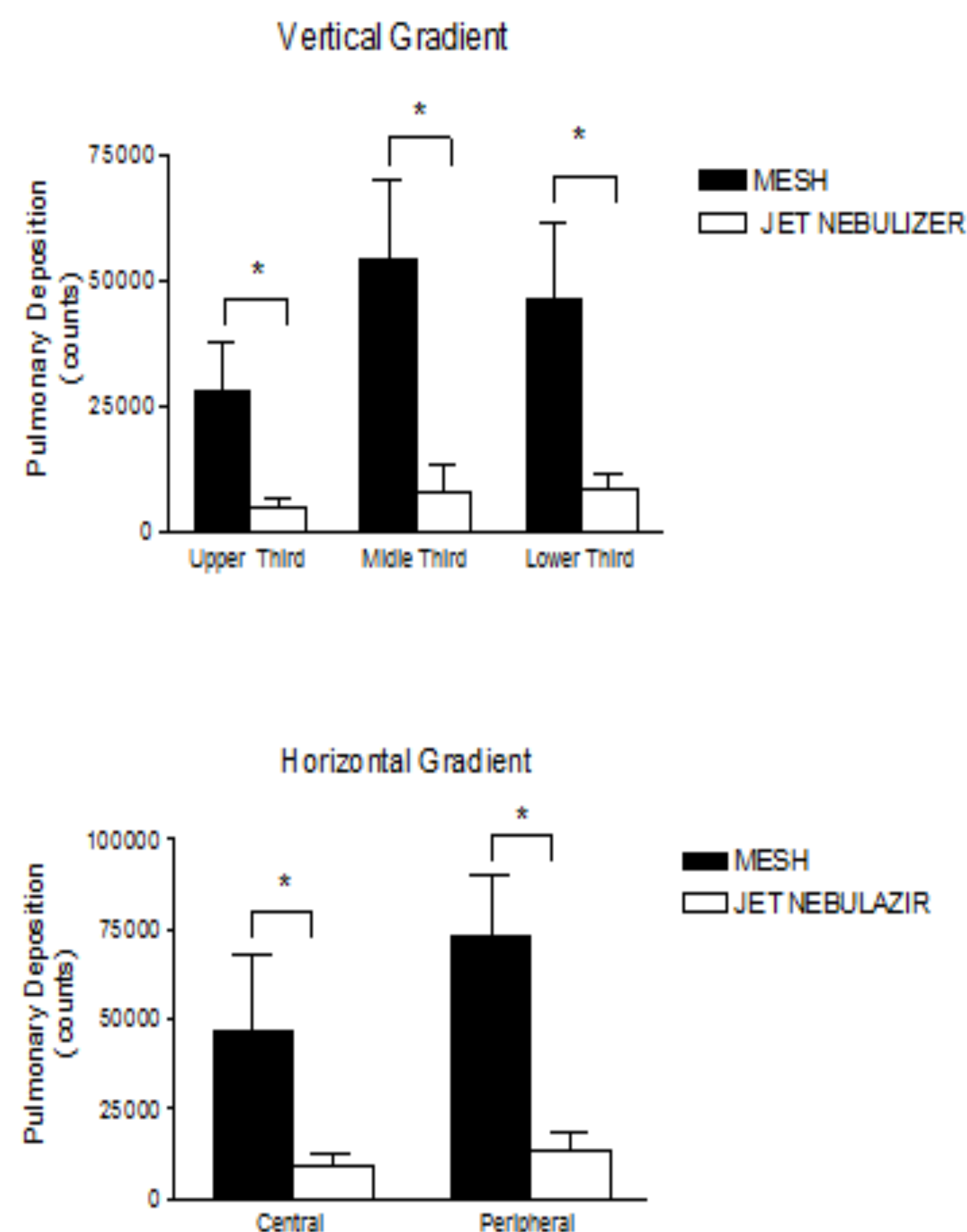
Table 1. Anthropometric and lung function.

	Healthy volunteers (n=12)
Age (years)	25.5± 7.55
BMI(kg/m ²)	23.8±3.86
RR(ipm)	15.5± 3.42
HR(bpm)	84.8±8.66
SpO ₂ (%)	97.5± 1.16
IC(L)	2.5 ± 0.72
FEV ₁ (%pred)	90.5±10.73
Peak Flow (%pred)	83.6±9.70
FEV ₁ /FVC (%pred)	104.1±9.18

TABLE 2. Mass aerosol balance presented in pulmonary extrapulmonary deposition in each phases of the study as a percentage.

	Phase 1(n=6) Jet Nebulizer	Phase 2(n=6) Mesh	p-value
Lung(%)	4.5±1.35	22.8±9.83	0.004
Upper airways(%)	1.7±0.51	3.3±2.08	NS
Stomach(%)	0.9±0.38	3.7±2.18	0.010
Device(%)	13.1±4.60	36.7±15.12	0.037
Nebulizer (%)	75.0±4.46	10.4±9.93	0.004
Expiratory filter(%)	41.4±14.18	18.2±23.22	NS

Figure 3. Intergroup comparison of mass aerosol deposition in healthy adults in vertical and horizontal gradient expressed as total count (mean± SD).

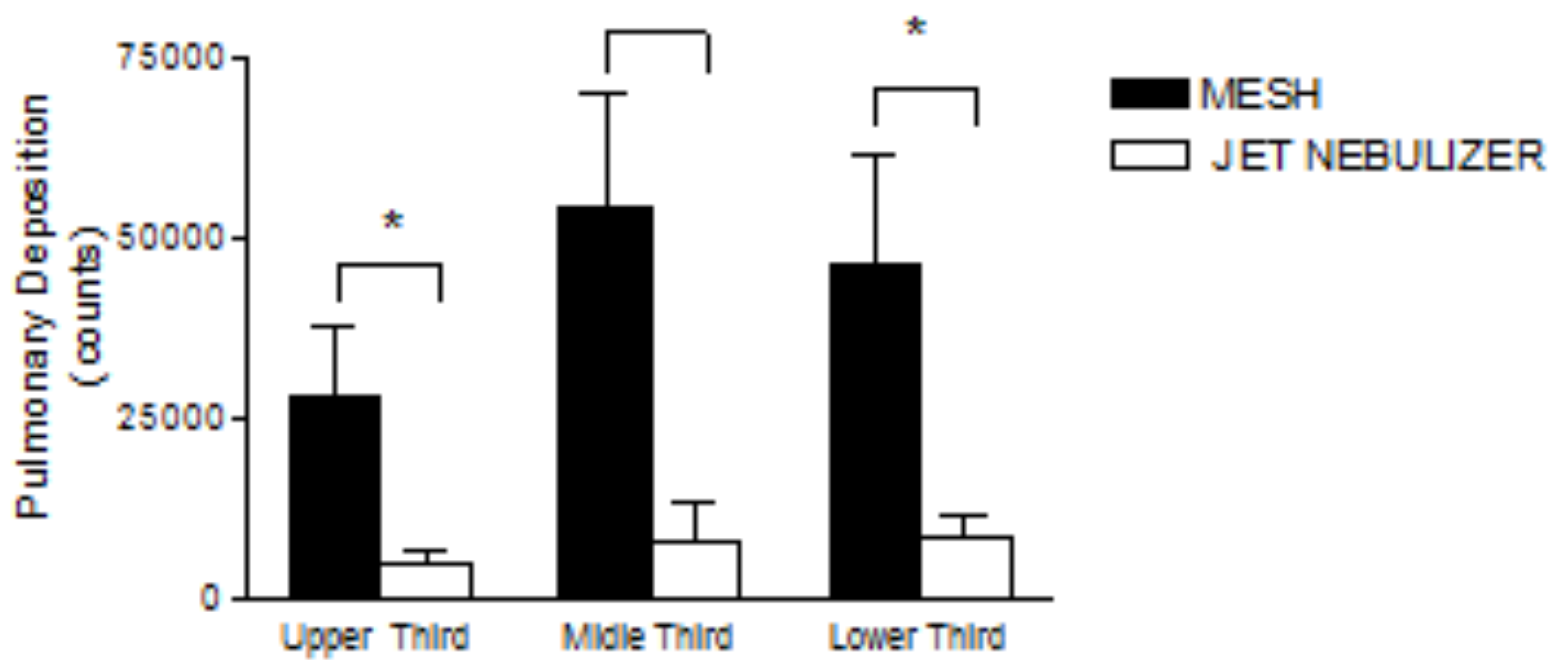


Conclusion

- Jet nebulizers has a lower performance than mesh. In healthy voluntaries, radioaerosol pulmonary deposition with mesh nebulizers was more efficient than the jet nebulizer and in the jet nebulizers there is a greater residual volume resulting in lower delivery to patient.

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Horizontal Gradient

