



***Comparison of Lung Deposition in Two Types of Nebulization  
Intrapulmonary Percussive Ventilation vs. Jet Nebulization***

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◆ ***Find This Study***

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◆ ***The Study***

To compare *in vitro* and *in vivo* characteristics of the nebulizer of the IPV device (Percussionaire), with those of standard jet nebulization (Sidestream). Comparison of particle deposition with both devices can give important information on their respective efficacy and indications. The aerodynamic particle size analysis was performed in 10 healthy subjects, and the lung deposition was investigated by tomoscintigraphy.

◆ ***The Results***

Intrapulmonary deposition (IPD) was high with Sidestream in 7 subjects of 10. There was striking variability of IPD with IPV. The IPD/WBD (whole-body dose) ratio showed that more drug was dispersed in the body and less deposited in the lung with IPV than with Sidestream.

◆ ***What's New***

Lung deposition depends on particle size distribution, which is under the influence of air flow, filling volume, drug solution, and ambient temperature. In this study, those parameters were kept constant to avoid variability. A fixed driving pressure of compressed air for both nebulizers that corresponded to the minimal pressure recommended by the IPV manufacturer were also used.

◆ ***Note***

There was a significant correlation between respiratory frequency (RF) and penetration index (PI) for the Sidestream and shows that the peripheral deposition (PD) is improved with a decrease in RF. In the IPV, the changes in RF were not related to PI.

Because some drugs have side effects linked to the extrathoracic deposition (*e.g.*, inhaled corticosteroids), this could be a disadvantage for the IPV.

◆ ***Bottom Line***

This study demonstrates that IPV cannot replace a standard nebulizer such as Sidestream, if a pharmacologic agent must be delivered to the lung. Because of the high cost of IPV and the large interindividual variability of its IPD, the authors cannot recommend IPV as a first choice for inhaled drug therapy.