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Fatty airways: implications for obstructive disease

John G. Elliot^{1,2}, Graham M. Donovan³, Kimberley C.W. Wang^{2,4},
Francis H.Y. Green⁵, Alan L. James^{1,6} and Peter B. Noble²

Affiliations: ¹West Australian Sleep Disorders Research Institute, Dept of Pulmonary Physiology and Sleep Medicine, Sir Charles Gairdner Hospital, Nedlands, Australia. ²School of Human Sciences, The University of Western Australia, Crawley, Australia. ³Dept of Mathematics, University of Auckland, Auckland, New Zealand. ⁴Telethon Kids Institute, University of Western Australia, Nedlands, Australia. ⁵Dept of Pathology and Laboratory Medicine, University of Calgary, Calgary, AB, Canada. ⁶School of Medicine and Pharmacology, The University of Western Australia, Nedlands, Australia.

Correspondence: John G. Elliot, West Australian Sleep Disorders Research Institute, Dept of Pulmonary Physiology and Sleep Medicine, Sir Charles Gairdner Hospital, Queen Elizabeth II Medical Centre, Hospital Avenue, Nedlands, Western Australia 6009, Australia. E-mail: john.elliott@health.wa.gov.au

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In individuals with elevated BMI, adipose tissue accumulates within the airway wall, correlates with greater wall thickness and airway inflammation and represents a new mechanism for airway pathophysiology in obese asthmatic patients <http://bit.ly/2maDoSp>

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ABSTRACT Epidemiological studies report that overweight or obese asthmatic subjects have more severe disease than those of a healthy weight. We postulated that accumulation of adipose tissue within the airway wall may occur in overweight patients and contribute to airway pathology. Our aim was to determine the relationship between adipose tissue within the airway wall and body mass index (BMI) in individuals with and without asthma.

Transverse airway sections were sampled in a stratified manner from *post mortem* lungs of control subjects (n=15) and cases of nonfatal (n=21) and fatal (n=16) asthma. The relationship between airway adipose tissue, remodelling and inflammation was assessed. The areas of the airway wall and adipose tissue were estimated by point count and expressed as area per mm of basement membrane perimeter (Pbm). The number of eosinophils and neutrophils were expressed as area densities.

BMI ranged from 15 to 45 kg·m⁻² and was greater in nonfatal asthma cases (p<0.05). Adipose tissue was identified in the outer wall of large airways (Pbm >6 mm), but was rarely seen in small airways (Pbm <6 mm). Adipose tissue area correlated positively with eosinophils and neutrophils in fatal asthma (Pbm >12 mm, p<0.01), and with neutrophils in control subjects (Pbm >6 mm, p=0.04).

These data show that adipose tissue is present within the airway wall and is related to BMI, wall thickness and the number of inflammatory cells. Therefore, the accumulation of airway adipose tissue in overweight individuals may contribute to airway pathophysiology.