Bariatric Surgery Improves Asthma Control in Morbidly Obese

By Will Boggs MD

May 15, 2015

NEW YORK (Reuters Health) - Bariatric surgery improves small airway function and decreases systemic inflammation, thereby improving asthma control in morbidly obese individuals, researchers from the Netherlands report.

"The main treatment for morbidly obese subjects with asthma is bariatric surgery," Dr. Astrid van Huisstede, from Saint Francis Hospital, Rotterdam, told Reuters Health by email. "And as there is no eosinophilic bronchial inflammation, inhaled corticosteroids should be prescribed with care."

Obesity more than doubles the risk of developing asthma, and obese patients with asthma have worse asthma control and are less responsive to standard therapy than lean patients with asthma.

Dr. van Huisstede's team evaluated the impact of weight loss by bariatric surgery on asthma control, lung function, and bronchial and systemic inflammation in a study of 78 morbidly obese patients, including 27 with asthma who had bariatric surgery (BS+A), 12 with asthma who did not have bariatric surgery (NBS+A), and 39 without asthma who had bariatric surgery (BS-A).

Forced expiratory volume (FEV1), functional residual capacity (FRC), and total lung capacity (TLC) improved in both bariatric surgery groups, whereas FEV1/forced vital capacity (FVC) and residual volume (RV) improved only in the BS-A group in the 12 months after bariatric surgery.

"These results can be better explained by a reduction in lung restriction than by a reduction in lung obstruction," the researchers wrote.

Small airway function also improved significantly in both bariatric surgery groups, according to the April 30 Thorax online report.

Asthma control improved in both asthma groups (bariatric surgery or not), but asthma-related quality of life improved significantly only in the BS+A group.

Such markers of systemic inflammation as C-reactive protein, leptin, and adiponectin improved significantly only in the bariatric surgery groups.

Markers of bronchial inflammation, however, remained largely unchanged in the bariatric surgery groups, though bronchial mast cells decreased significantly at 12 months in the BS+A group and CD3+ T cells decreased significantly only in the BS-A group.

"The main surprise was that in contrast to lean asthma patients, morbidly obese asthma patients do not have bronchial inflammation," Dr. van Huisstede said. "Furthermore, the big question which needs to be resolved is why do some morbidly obese get asthma, while others do not? The improvement in small airway function was also an unexpected finding, and might explain this."
"It is important to make a difference between subjects who have asthma and then become obese, and those who are obese and then get asthma," Dr. van Huisstede said. "Unfortunately, I did not have sufficient data to examine these two groups carefully. But it is to be expected that the first group has less effect of bariatric surgery, and inhaled corticosteroids are still needed."

Dr. David Chapman, from the University of Vermont Lung Center, Burlington, told Reuters Health by email, "The data presented by Dr. van Huisstede and colleagues supports research from our institution suggesting that a percentage of the population may be particularly sensitive to the effects of obesity on small airway function. Although currently elusive, understanding this predisposing factor is likely to provide an important component of future management in this difficult-to-treat asthmatic population."

"This study highlights that asthma symptoms in the obese are not necessarily due to uncontrolled airway inflammation but may be contributed to by the mechanical effects of increased adiposity on lung function," Dr. Chapman concluded. "Therefore, weight loss should be an important consideration in the clinical management of obese patients with uncontrolled asthma despite treatment with maximal standard therapy."

"Modest weight loss (5-10%) appears sufficient to improve asthma symptoms in mildly obese patients, although this was not accompanied by improvements in lung function or airway sensitivity," Dr. Chapman explained. "As such, morbidly obese patients may require bariatric surgery to obtain the necessary weight loss to improve small airway function, airway sensitivity, and thus asthma symptoms."

The Foundation Research and Development Department of Internal Medicine at Saint Francis Hospital supported this research. The authors reported no competing interests.

SOURCE: [http://bmj.co/1FmLB8D](http://bmj.co/1FmLB8D)

Thorax 2015.

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Cite this article: Bariatric Surgery Improves Asthma Control in Morbidly Obese. Medscape. May 14, 2015.