

Obesity: A Risk Factor for Asthma in Adults?

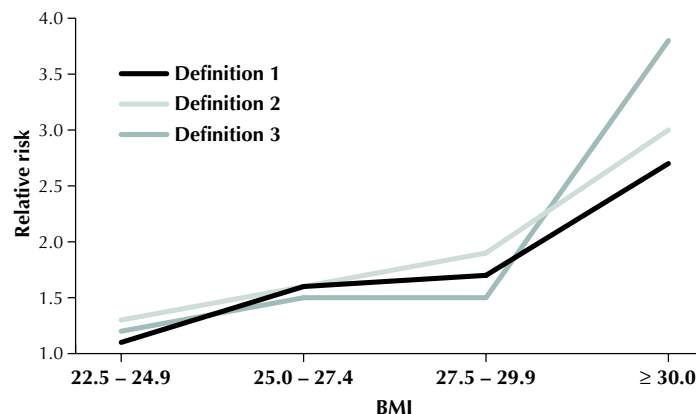
Obesity is a known risk factor for hypertension, type 2 diabetes mellitus, gastroesophageal reflux disease, and other disorders. Should asthma be added to this list? Camargo et al¹ suggest that the rising prevalence of asthma in adults may be explained, at least in part, by the concomitant increase in the prevalence of obesity.

Over a four-year period, the investigators examined the relationship between body mass index (BMI) and risk of adult-onset asthma in a cohort of 85,911 women (age range, 26 to 46 years) enrolled in the Nurses' Health Study II. Data were collected by serial questionnaires. Women who reported developing asthma were categorized according to three case definitions of increasing strictness:

- ◆ **Case definition 1:** Reports of physician-diagnosed asthma and use of asthma medications since diagnosis on two separate questionnaires.
- ◆ **Case definition 2:** Criteria from previous case definition and reported use of a prescribed, long-term, preventive asthma medication within the past year.
- ◆ **Case definition 3:** Criteria from two previous case definitions and report of physician-diagnosed asthma within one month of symptom onset.

Camargo et al¹ identified 1,596 incident cases of asthma (case definition 1); 1,079 of these met the criteria for the second case definition, and 453 fulfilled the criteria for the third. A strong, independent, positive association was noted between asthma risk and excessive body weight, even after adjustment for possible confounding factors such as age, smoking status, and physical

Figure 1. Relative risk of asthma according to BMI



BMI, body mass index.

* The reference for comparison was asthma risk in women with a BMI of 20.0 to 22.4; the relative risks have been adjusted for age, race, US region, smoking status, physical activity, total energy intake, hysterectomy status, birth weight, and duration of breastfeeding.

Adapted from Camargo CA Jr et al. *Arch Intern Med.* 1999.¹

activity level (Figure 1).

Women with obesity (a BMI of 30 or higher) were at highest risk; in this group, the association was strongest among the case definition 3 subgroup. Overall, in women with a BMI of 22.5 or higher, 38% of their increased asthma risk could be attributed to their excessive weight; in women with a BMI of 25 or higher and those with a BMI of 30 or higher, this proportion rose to 50% and 62%, respectively.

In an accompanying editorial, Wilson and Irwin² urged caution, noting that the statistical correlation may not have reflected causality. Factors to consider include:

- ◆ An operational definition of asthma not based on bronchoprovocation challenge testing and response to therapy may have led to a misclassification bias. Also, the population studied, young female health care professionals, may have introduced a selection bias.
- ◆ Asthma and obesity are two common conditions and may be becoming more common independently.
- ◆ Humoral or physiologic factors may account for the statistical association between asthma and obesity.

Nevertheless, Wilson and Irwin found the study's results intriguing, and they suggest that further studies are warranted.

REFERENCES

1. Camargo CA Jr, Weiss ST, Zhang S, et al. Prospective study of body mass index, weight change, and risk of adult-onset asthma in women. *Arch Intern Med.* 1999;159:2582-2588.
2. Wilson MM, Irwin RS. The association of asthma and obesity: is it real or a matter of definition, Presbyterian ministers' salaries, and earlobe creases? *Arch Intern Med.* 1999;159:2513-2514.