

Figure 1. (A) Computed tomography of the chest shows a nodule, 2.0 cm \times 2.0 cm in size, in the right lower lobe and multiple micronodules in both lungs. (B) Bronchoscopic findings show total obstruction of the right basal bronchus by a polypoid tumor. (C) Biopsy specimen from the endobronchial tumor shows findings of neuroendocrine carcinoma (hematoxylin and eosin staining, $\times 200$). (D) Immunohistochemical staining for gastrin is positive.

Endobronchial metastasis is defined as nonpulmonary neoplasms that metastasize to the proximal central or subsegmental bronchus, in a bronchoscopically visible range, and is frequently associated with primary tumors of the kidney, colon/rectum, breast, and others (2). To the best of our knowledge, there have been no previous reports of endobronchial metastasis from gastrinoma. This is the first reported case of endobronchial metastasis from gastrinoma. Therefore, the present case reminds physicians to consider endobronchial metastasis from extrathoracic endocrine neoplasms.

Therapy for gastrinoma includes surgery for localized disease, debulking surgery for metastatic disease, and chemotherapy. More than sixty percent of gastrinomas are malignant; 5-year survival for patients with gastrinoma with liver metastases is between 40% and 75%, and it is almost 100% when no liver metastases are present (3). In this patient, tumor progression has been slow, and he remains almost asymptomatic after debulking surgery for liver metastases and chemotherapy.

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MIKIO TOYOSHIMA, M.D., PH.D.
Hamamatsu Rosai Hospital
Hamamatsu, Japan
and
Hamamatsu University School of Medicine
Hamamatsu, Japan

KINGO CHIDA, M.D., PH.D.
TAKAFUMI SUDA, M.D., PH.D.
HARUHIKO SUGIMURA, M.D., PH.D.
Hamamatsu University School of Medicine
Hamamatsu, Japan

MASAKI SATO, M.D., PH.D.
Hamamatsu Rosai Hospital
Hamamatsu, Japan

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Influence of Body Mass Index on Effects of a Shared Asthma Treatment Decision-Making Intervention

Asthma is a significant public health problem, with approximately 24.6 million Americans reporting current asthma in 2009 (1). Obesity prevalence has continuously increased over the last 30 years, reaching 33.8% among U.S. adults in 2007–2008 (2). A meta-analysis of prospective studies showed a dose-dependent relationship between increasing body mass index (BMI) and the risk of incident asthma (3). Understanding the influence of BMI and obesity on effectiveness of interventions to improve asthma control will help clinicians better care for obese patients with asthma.

The Better Outcomes of Asthma Treatment study, a randomized controlled trial in 612 adults with poorly controlled asthma, found that a shared treatment decision-making (SDM) intervention improved controller medication adherence and clinical outcomes (4). Given the increased attention to the links between obesity and asthma, we conducted *post hoc* analyses to investigate whether baseline BMI modified the SDM intervention effects on asthma medication acquisition outcomes (fill/refill adherence and regimen strength) and clinical outcomes in the follow-up year. We hypothesized that obese patients would have benefitted less from the SDM intervention than did overweight or normal weight patients. Some of the results reported here were previously reported in the form of an abstract (5).

Standard BMI categories were defined: normal (18.5–24.9 kg/m², n = 132) and underweight (<18.5 kg/m², n = 7) combined, overweight (25–29.9 kg/m², n = 185), and obese (≥ 30 kg/m², n = 286). Using comprehensive pharmacy dispensing records, we computed continuous medication acquisition (CMA) indices (6–8) to measure fill/refill adherence for controller medications (inhaled corticosteroids, leukotriene modifiers, and others) and for long-acting β agonists (LABA) during the 12 months before and after randomization of individual participants. Controller and LABA medication regimen strength was measured by cumulative beclomethasone canister-equivalents (C-E) and salmeterol diskus-equivalents (D-E), respectively, using a standardized weighting methodology (9). Clinical

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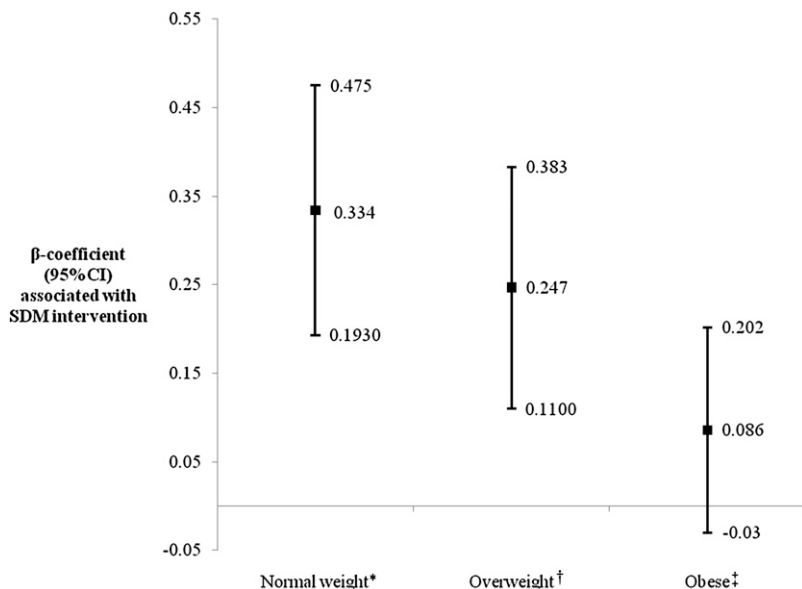


Figure 1. Increase in controller continuous medication acquisition (CMA) associated with shared decision-making (SDM) intervention, compared with usual care, by body mass index (BMI) category. *Normal weight: $n = 139$; β -coefficient for SDM versus UC: P value < 0.0001 . †Overweight: $n = 185$; β -coefficient for SDM versus UC: P value $= 0.0005$. ‡Obese weight: $n = 286$; β -coefficient for SDM versus UC: P value $= 0.15$. Note that estimates based on multivariable regression models that were stratified by BMI category. Each model included group assignment, the five randomization balancing variables (4), and the baseline controller CMA.

outcome measures included the symptom subscale of the Juniper mini-Asthma Quality of Life Questionnaire (mini-AQLQ) (10), the Asthma Therapy Assessment Questionnaire (ATAQ) (11), asthma-related health care utilization, rescue medication use (via albuterol C-E), and lung function. Multivariable regression models were used to determine whether BMI modified the SDM intervention effect on these outcomes relative to usual care.

Compared with the controller regimen strength among normal weight SDM patients (0.036 ± 0.02 C-E), obese (0.05 ± 0.026 C-E, $P = 0.027$) and overweight SDM patients (0.048 ± 0.03 C-E, $P = 0.0007$) negotiated a higher daily controller dose. BMI negatively modified the SDM intervention effect on controller fill/refill adherence ($P = 0.04$; Figure 1). The SDM-related increase in controller CMA index among obese patients, relative to obese usual care patients, was smaller than observed for the other weight groups, although still in a favorable direction ($\beta = 0.086$; 95% confidence interval [CI], -0.03 to 0.202 ; $P = 0.15$). Obese SDM patients also received a smaller intervention benefit (but still significantly better than UC) in terms of the total number of salmeterol D-E dispensed ($\beta = 1.82$; 95% CI, 0.81 to 2.84 ; $P = 0.0005$) than SDM patients in other weight groups (interaction term $P = 0.04$).

BMI did not significantly modify the observed beneficial SDM intervention effects on any of the clinical outcomes. Like normal weight and overweight SDM patients, obese SDM patients demonstrated significantly better clinical outcomes compared with obese patients in usual care for asthma-related health care utilization, use of rescue medication (albuterol C-E), the FEV₁ and FEV₁/FEV₆ ratio, and the odds of reporting no asthma control problems (a score of 0) on the ATAQ scale.

Although these analyses are exploratory, and thus, further research is needed, these results demonstrate that a shared decision-making approach to treatment choice can clinically benefit adult patients with poorly controlled asthma, regardless of BMI.

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ESTELA AYALA, M.D.

SANDRA R. WILSON, PH.D.

JUN MA, M.D., PH.D.

*Palo Alto Medical Foundation Research Institute
Palo Alto, California*

and

*Stanford University School of Medicine
Stanford, California*

SARAH B. KNOWLES, PH.D., M.P.H.

*Palo Alto Medical Foundation Research Institute
Palo Alto, California*

A. SONIA BUIST, M.D.

*Oregon Health & Science University
Portland, Oregon*

PEG STRUB, M.D.

*Kaiser Permanente
San Francisco, California*

PHILIP W. LAVORI, PH.D.

*Stanford University School of Medicine
Stanford, California*

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