

vs 16% of the salmeterol-treated group).

For secondary end points, treatment with salmeterol was associated with higher morning and evening peak expiratory flow and forced expiratory volume in 1 second (FEV₁); a reduction in symptoms, use of bronchodilators, and airway responsiveness to methacholine. Also, salmeterol treatment had no effect on serum potassium concentration, 24-hour heart rate, or the final FEV₁ achieved during a salbutamol dose-response study.

Therefore, it is concluded that, in subjects who adjusted their treatment with inhaled steroid according to guidelines, the addition of salmeterol, 50 µg twice daily, was associated with a reduction in use of inhaled steroid and improved lung function and control of symptoms.

Wilding P, Clark M, Coon JT, et al: Effect of long term treatment with salmeterol on asthma control: a double blind, randomised crossover study. *BMJ* 1997;314:1141-1146.

Body mass index as measure of fatness in children

A cross-sectional study evaluated whether body mass index (BMI) is a representative equivalent measure of body fatness independent of age, race, gender, sexual maturation, and distribution of fat in children and adolescents.

Included in the study were 192 healthy subjects (100 boys and 92 girls, 103 white and 89 black) aged 7 to 17 years. The subjects had their height and weight measured in the standard manner, and BMI (kg/m²) was calculated from these values. Dual energy x-ray absorptiometry was used to determine fat mass and percent body fat. Sexual maturation was evaluated by physical assessment. Distribution of fat was determined by the waist-to-hip ratio.

Except for the waist-to-hip ratio, there were no significant differences by gender and ethnic group for any of the demographic or anthropometric variables. White boys had a higher waist-to-hip ratio than black boys. BMI was significantly and positively correlated with age, stage of maturation, and all the anthro-

pometric variables in each race-sex group. The correlation of maturation stage with BMI was stronger than the correlation between age and BMI. A multiple regression analysis showed that BMI, gender, race, sexual maturation, and distribution of fat were all significant independent correlates of the percent body fat (multiple R²=.77). The percent body fat-BMI relationship was dependent on the stage of sexual maturation, gender (for an equivalent BMI, girls have greater amounts of body fat than boys), race (for equivalent BMI, whites have higher body fat than blacks), and waste-to-hip ratio (for equivalent BMI, those with central obesity have greater body fatness than those with peripheral obesity).

BMI was found not to be an equivalent measure of the percent body fat for each race-sex group. When BMI is used as a measure of body fatness in a research or clinical setting, particularly when comparisons are made across race and gender, it may be important to consider the maturation stage, race, gender, and distribution of body fat in the interpretation of the results.

Daniels SR, Khoury PR, Morrison JA: The utility of body mass index as a measure of body fatness in children and adolescents: Differences by race and gender. *Pediatrics* 1997; 99:804-807.

Body weight and prevention of CHD, stroke, diabetes in middle-aged men

In this prospective study of a male cohort, 7735 men, aged 40 to 59 years at screening, were selected from one general practice in each of 24 British towns. They were followed up for an average of 14.8 years to determine the body mass index (BMI) associated with the lowest morbidity and mortality. Specific outcome measures included all-cause death rate, heart attacks, and stroke (fatal and non-fatal) and development of diabetes mellitus, or any of these outcomes (combined end point).

A total of 1271 deaths occurred from all causes, 974 heart attacks, 290 strokes, and 245 new onset diabetes mellitus. All-

cause mortality was increased only in men with a BMI (kg/m²) less than 20.0 and in men with a BMI equal to or greater than 30.0. However, even after age, smoking, social class, alcohol consumption, and physical activity were adjusted for, the risk of cardiovascular death, heart attack, and diabetes increased progressively from an index of less than 20.0.

For the combined end point, the lowest risks were seen for a BMI of 20.0 to 23.9. In never-smokers and former smokers, deaths from any cause rose progressively from a BMI of 20.0 to 21.9 and for the combined end point, from 20.0 to 23.9. Age-adjusted levels of a wide range of cardiovascular risk factors rose or fell progressively from an index of less than 20.0. It appears from these findings that in the middle-aged British men studied, a healthy BMI is about 22.0.

Shaper G, Wannamethee SG, Walker M: Body weight: Implications for the prevention of coronary heart disease, stroke, diabetes mellitus in a cohort study of middle aged men. *BMJ* 1997; 314:1311-1317.

Sleep-disordered breathing in diastolic heart failure

Sleep-disordered breathing is common in congestive heart failure. Although isolated diastolic heart failure (DHF) accounts for up to a third of all cases of congestive heart failure, the prevalence of sleep-disordered breathing in DHF is unknown. Therefore, the authors sought to determine the prevalence and characteristics of sleep-disordered breathing in a group of patients with symptomatic DHF.

The study group comprised 20 subjects (13 women, 7 men; mean age, 65±6.0 years; mean body mass index [BMI] 28±3.2) with symptomatic DHF (New York Heart Association class II or III) and isolated diastolic dysfunction on echocardiograms. All subjects were assessed with lung function tests, modified sleep and health questionnaire, and overnight polysomnography. Significant sleep-disordered breathing was defined as an apnea/hypopnea index (AHI) greater than 10.

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Seventeen (85%) of the subjects had a diagnosis of hypertension. Overall sleep quality was poor, with fragmentation and frequent arousals associated with respiratory events. Fifty-five percent of the patients had significant sleep-disordered breathing, mainly obstructive apnea. Both BMI and the prevalence of hypertension were similar in patients with and without sleep-disordered breathing.

The deceleration time, an index of diastolic dysfunction, was more prolonged in the group with sleep-disordered breathing (236 ± 40 ms vs 282 ± 31 ms; $P < .05$). As a group, a lower minimum percentage arterial oxygen saturation during sleep, but not AHI, was associated with more severe degree of diastolic dysfunction on echocardiogram, including a lower ratio between the early peak transmitted flow velocity and the late peak atrial systolic velocity ($\rho = -.57$; $P < .05$) and a prolonged isovolumic relaxation time ($\rho = -.54$; $P < .05$).

Sleep-disordered breathing is common in patients with DHF. In patients with DHF and sleep-disordered breathing, the associated diastolic dysfunction may be worse than in patients without sleep-disordered breathing. However, a causal relationship remains to be established.

Chan J, Sanderson J, Chan W, et al: Prevalence of sleep-disordered breathing in diastolic heart failure. *Chest* 1997;111:1488-1493.

Zidovudine, didanosine, or both as initial treatment in symptomatic HIV-infected children

Zidovudine has been the preferred drug for the initial treatment of symptomatic children infected with the human immunodeficiency virus (HIV). A multicenter, double-blind study was designed to assess the efficacy and safety of treatment with zidovudine alone or in combination with didanosine.

Children aged 3 months through 18 years were stratified according to age (< 30 months or ≥ 30 months) and randomly assigned to receive zidovudine, didanosine, or zidovudine plus didanosine.

The primary end point was length of time to death or to progression of HIV disease.

A total of 831 children could be evaluated, of whom 92% had never received antiretroviral therapy and 90% had acquired HIV perinatally. An interim analysis (median follow-up, 23 months) showed a significantly higher risk of HIV-disease progression or death in the patients receiving zidovudine alone than in those receiving combination therapy (relative risk, 0.61; 95% confidence interval, 0.42 to 0.88; $P = .007$).

The study arm with zidovudine alone was stopped and unblinded; the other two treatment arms were continued. At the end of the study, didanosine alone had an efficacy similar to that of zidovudine plus didanosine (median follow-up, 32 months) (relative risk of disease progression or death, 0.98; 95% confidence interval, 0.70 to 1.37; $P = .91$). Patients receiving didanosine alone had a significantly lower risk of anemia or neutropenia ($P = .036$).

Results of this study indicate that either didanosine alone or zidovudine plus didanosine was more effective than treatment with zidovudine alone in children with symptomatic HIV infection. The efficacy of didanosine alone was similar to that of the combined therapy and was associated with less hematologic toxicity.

Englund JA, Baker CJ, Raskino C, et al: Zidovudine, didanosine, or both as the initial treatment for symptomatic HIV-infected children. *N Engl J Med* 1997;336:1704-1712.

Orthostatic headaches and diffuse pachymeningeal gadolinium enhancement

The authors describe their experience with 26 consecutive patients (15 men and 11 women aged 24 to 76 years) with orthostatic headaches and diffuse pachymeningeal gadolinium enhancement on magnetic resonance imaging (MRI). Clinical imaging and follow-up data were available for all these patients. Slide mate-

DIRECTOR OF MEDICAL EDUCATION

Northeast Regional Health System has an immediate opening for a Director of Medical Education. Northeast, the founding osteopathic institution, is located in Kirksville, Missouri, and is approximately 90 miles north of Columbia, Missouri. The area offers a variety of outdoor recreational activities and educational opportunities. Residents have access to larger cities while maintaining a small town quality of life.

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