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## C O M M E N T A R Y

# Are Sociodemographic Factors Important in Sarcoidosis?

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**T**he article entitled "Pulmonary Sarcoidosis: Comparison of Patients at a University and a Municipal Hospital" by Yeager et al<sup>1</sup> in this issue, is a collaborative, retrospective comparison of the effects of sociodemographic aspects of sarcoidosis on the course and prognosis of patients under care at two types of institutions. The authors have shown that the differences in outcome found in samples from

each hospital were related to sociodemographic status, health care insurance or lack thereof, and access to care—all highly suspect, but previously unsubstantiated by hard data.

The study is a clinically (as well as statistically) significant one, in that it emphasizes differences in outcome affecting poor minority populations with sarcoidosis, not previously addressed. By controlling for race, a confounding variable has been eliminated. Marked geographic variability occurs in sarcoidosis.<sup>2,3</sup> Yeager et al<sup>1</sup> pointed out that the private university hospital serves a more geographically diverse population than does the municipal hospital, a differ-

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ence that may contribute to geographical bias. The sociodemographic factors may help explain this variability in part. Medication noncompliance based on socioeconomic status, recalcitrance, and substance abuse also could have been factors in the increased morbidity for prison inmates with the disease. Assigning inmates to outdoor work crews, often in prolonged bright sunlight, could have increased morbidity from sarcoidosis in the municipal hospital sample by inducing hypercalcemia, hypercalcuria, and nephrocalcinosis in some patients. Unfortunately, differences in education may have been unavailable from clinical records.

The study protocol used by Yeager et al<sup>1</sup> placed a lower age limit of 18 years on subject participation, which may have spuriously increased the median and mean ages of the patients when compared with similar studies on African Americans in the same geographic areas.<sup>2</sup> Sarcoidosis also occurs in children and adolescents.<sup>4</sup>

The authors included some patients without confirmatory tissue biopsy. Since the suggestion of Winterbauer et al<sup>5</sup> to accept the diagnosis of sarcoidosis based on a compatible clinical picture without biopsy, more researchers, including Yeager et al, risk introduction of a misclassification bias with granulomatous diseases that mimic sarcoidosis.<sup>6</sup> Sarcoidosis is a systemic disease of undetermined etiology, not withstanding the immunologic advances of the past 25 years. In their writings, many authors consider only their organ system of interest in discussions of the disease. It is tempting to speculate the degree to which extrapulmonary involvement may have contributed to morbidity in the population samples under study.

The smoking history of patients in this study was not uniformly available from the clinical records. The majority of sarcoidosis patients are nonsmokers. Some researchers have suggested that smoking, as bad as it sounds, may be protective from acquiring sarcoidosis.<sup>7,8</sup> I suspect the majority of prison inmates smoked more than noninmates. If so, this could have contributed to the decreased diffusing capacity of the lung for carbon monoxide found by Yeager et al<sup>1</sup> in the municipal hospital population. The increased back pressure of carbon monoxide in the blood of smokers decreases the alveolar-capillary gradient

available for diffusion when carbon monoxide is used as a tracer gas. In addition to the foregoing, the authors point out that sarcoidosis usually causes a restrictive type of ventilatory defect on pulmonary function testing but may have an obstructive component unassociated with smoking. In fact, this may occur in approximately 15% of patients.<sup>9</sup>

When used alone, the forced expiratory volume in one second (FEV<sub>1</sub>) is a poor discriminator between restrictive versus obstructive ventilatory defect because it may be decreased in both. The measurement must be related to the forced vital capacity (FVC) as FEV<sub>1</sub>/FVC to be of value in this regard. The fraction is <72% in airways obstruction but may be normal or increased in restriction.

This study by Yeager et al has much merit. It is suspected that additional fine epidemiologic studies on the effects of sociodemographic variables on disease outcome in underserved minority populations will ultimately emerge.

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