

GENERAL GYNECOLOGY

The health disparities of uterine fibroid tumors for African American women: a public health issue

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Uterine fibroid tumors (leiomyomas) are the most common benign pelvic tumors in women and are the major indication for hysterectomy. Fibroid tumors are more common and more severe among African American women. Although this disease disproportionately affects the African American population, we understand little about what causes the disparity. Fibroid tumors should be considered a public health issue, given the magnitude of the problem and the costs of health care for this disease. In this review, we examine the burden of disease from fibroid tumors in the African American population and review the natural history, diagnosis, and treatment of uterine fibroid tumors, with emphasis on how these can differ, depending on race. We also focus on the socio-economic burden caused by the disease and describe the anticipated influence of new health care reforms and funding mechanisms for fibroid tumor research.

Key words: disparity, hysterectomy, leiomyoma, Patient Protection and Affordable Care Act, uterine fibroid tumor

Uterine fibroid tumors, also termed *leiomyomas* or *myomas*, are the most common benign gynecologic tumors; ultrasound evidence shows that >80% of African American women and approximately 70% of white women will have uterine fibroid tumors by age 50.¹ However, because only 20-50% of all women with fibroid tumors experience related symptoms^{1,2} and because screening for fibroid tumors is not performed routinely, the true incidence is difficult to ascertain. In fact, the reported

incidence of fibroid tumors in most studies likely is underestimated because they include only symptomatic women with clinical diagnoses that have been confirmed ultrasonographically. For women in their 40s and 50s, abnormal uterine bleeding is the most common reason to seek gynecologic consultation, and fibroid tumors are among the most common causes of this symptom. Pelvic pain, another common reason for gynecologic consultation, is a symptom often associated with fibroid tumors. These

symptoms markedly alter the quality of life and reproductive health in affected women.^{3,4} Treatment options include many alternatives to hysterectomy, including medical therapies, minimally invasive surgery, uterine artery embolization, and magnetic resonance-guided focused ultrasound surgery. Hysterectomy, however, remains the most common intervention, and in the United States, fibroid tumors are the leading indication for hysterectomies.

Disproportionate impact of fibroid tumors in African American women

In addition to a having greater lifetime incidence of fibroid tumors, African American women have a 3-fold increased age-adjusted incidence rate and a 3-fold increased relative risk of fibroid tumors when adjusted for other confounding factors.^{1,5} Some investigators suggest a doubling of risk for Hispanic women, whereas others suggest that only African American women have increased risk.⁴⁻⁶

African ancestry is considered a key risk factor for the development of fibroid tumors. African American women have fibroid tumors diagnosed at earlier ages, are more likely to be symptomatic, and are likely to have different responses to medical treatment than white women.⁷

The size and growth rates of fibroid tumors are greater in African American women, who are more likely to undergo surgical intervention than other racial groups.⁸ Approximately 42 per 1000 women are hospitalized annually because of fibroid tumors, but African American women have higher rates of hospitalization, myomectomies, and hysterectomies compared with white women (relative risk, 3.5, 6.8, and 2.4, respectively).^{9,10}

Taran et al¹¹ published a systematic review detailing the limited racial diversity in high-quality fibroid tumor studies that were published from 2000-2006 and

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Received May 17, 2013; revised July 12, 2013; accepted Aug. 8, 2013.

Supported in part by grant R01060503 (E.A.S.) from the National Institutes of Health.

E.A.S. serves as a clinical trial investigator for InSightec, National Institutes of Health (HD060503), and as a consultant for Abbott, Bayer, and Gynesonics; she also receives royalties from UpToDate, Johns Hopkins University Press, and Massachusetts Medical Society. The remainder of the authors report no conflicts of interest.

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0002-9378/\$36.00 • © 2014 Mosby, Inc. All rights reserved. • <http://dx.doi.org/10.1016/j.ajog.2013.08.008>

attempted to determine the factors that encouraged the reporting of race and ethnicity. The investigation showed that >75% of fibroid tumor studies did not report the patients' race, and most of the studies that reported race were those exclusively of African American women (eg, reports from the Black Women's Health Study).¹² Of the remaining studies that reported race, African American women represented 15% of the studied population.¹¹

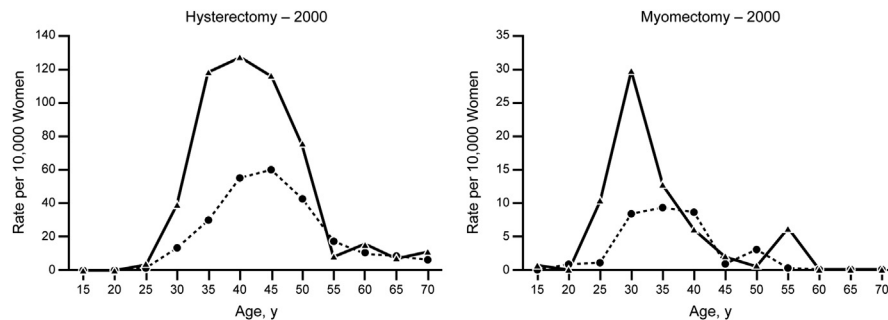
Biologic studies of racial differences

Despite the racial differences in symptoms and incidence, relatively little data have been published regarding the biologic basis of fibroid tumors in African American women. The few existing studies that examined large numbers of African American and white women (eg, the Nurses' Health Study) did not show that risk factors that traditionally differed by race accounted for the increased burden of fibroid tumors in African American women.^{5,7} Some data suggest that fibroid tumor growth differs by race, especially as women approach menopause.¹³ Although some evidence links environmental factors such as diet and history of abuse to this increased risk, most of this information comes from studies such as the Black Women's Health Study.¹³⁻¹⁵ A recent study has linked vitamin D insufficiency with increased fibroid tumor risk in African American women.¹⁶ This study is important not only because of the biologic plausibility of the mechanism (ie, darker skin inhibits the production of biologically active vitamin D) but also because it opens a potential pathway to prevention.

Information on the genetic basis of fibroid tumors in African American women has been sparse for several reasons. First, many of the important genetic studies of fibroid tumors using exome sequencing or genome-wide association studies have come from countries such as Finland and Japan, where there are few women of African descent.^{17,18} The Finding Genes for Fibroid Tumors study, which began in 1999, aimed to recruit both African American and white women in the United States for genome-wide association studies¹⁹; however, the

FIGURE

Utilization of fibroid surgeries by age and race



Resource utilization by age (*y*) and race (based on data from National Hospital Discharge Survey, National Ambulatory Medical Care Survey, and National Hospital Ambulatory Medical Care Survey only). The *solid line* denotes African American women; the *dotted line* denotes white women.

Adapted, with permission, from Flynn et al.²⁶

Eltoukhi. Health disparities of uterine fibroid tumors. *Am J Obstet Gynecol* 2014.

published reports have all been limited to the genetics of white women because participation by African American women has been limited.^{20,21} The historic issues of unethical treatment of African American medical study participants (eg, the Tuskegee syphilis studies) potentially has limited enrollment in these important studies.

Additional studies have demonstrated racial differences in fibroid tumors at the molecular level, with differential gene expression of genes, proteins, and microRNAs.^{6,22,23} Based on these biologic differences, it is reasonable to hypothesize that fibroid tumors in African American women may respond differently to medical therapy. If the pathophysiologic condition of fibroid tumors differs by race, there is a need for trials that will compare fibroid tumor therapies in African American vs white women.

Differences in surgical procedures and outcomes

Surgical treatment for fibroid tumors is especially prevalent among African American women because of both an earlier age of onset and more symptomatic disease. African American women are 2-3 times more likely to undergo hysterectomy for fibroid tumor tumors than are other racial groups.^{10,24} As reported in the National Hospital Discharge Survey, the total rates of hysterectomy for African American and

white women were similar from 1988-1990 (61.7 and 56.5 per 10,000 women, respectively). However, fibroid tumors as the primary indication for hysterectomy was much higher for African American women (61% vs 29% for white women).²⁴ This pattern was confirmed in another large cohort of 80,000 women that again showed that African American women had significantly higher rates of fibroid tumor surgery than white women.²⁵ Comparisons of the rates of hysterectomies and myomectomies in African American and white women indicate that African American women are more likely than white women to undergo both myomectomy and hysterectomy (Figure).²⁶ Myomectomy appears to be even more common in African American women, with almost a 7-fold increased relative risk.¹⁰ With the increasing racial diversity in the United States, this means that, if surgical rates are stable, fibroid tumor-related surgical procedures and hospitalizations are projected to increase by 20-31% by 2050.¹⁰

Fibroid tumors tend to be more numerous and larger among African American women who undergo hysterectomy,^{27,28} which increases their risk of blood transfusion and postsurgical complications such as infection and bleeding. However, there are no corresponding data on racial differences in disease burden before other fibroid tumor therapies or at the time of diagnosis.

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