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GENETIC VARIATION IN THE SMAD3 GENE IS ASSOCIATED WITH KNEE OSTEOARTHRITIS IN NORTH INDIAN POPULATION

A.C. Sharma, R.N. Srivastava, S.R. Srivastava, S. Raj, K. Baghel. *King George's Med. Univ., Lucknow, India*

Purpose: Osteoarthritis (OA) is the most common degenerative arthritis, a type of arthritis that is caused by breakdown of articular cartilage with eventual loss of the cartilage of the joints. Smad3 is a key intracellular messenger in the transforming growth factor β signaling pathway. Previous study suggested Smad3 gene mutation is a possible predisposing factor for human OA and found gene mutation in OA, providing insight into the function of SMAD3 mediated TGF-b signals in the development of OA and also suggested that Smad3 gene mutation may be a risk factor for genetic susceptibilities to OA. In this case control study, we investigated the possible correlation between the SNPs SmaI (C/T; rs6494629), FokI (A/C; rs2289263) in Smad3 gene and susceptibility to knee OA.
Methods: This study was conducted in the department of Orthopaedic Surgery, King George's Medical University (KGMU), Lucknow. In this study cases consisted of men and women ≥40 years that fulfilled American College of Rheumatology (ACR) clinical and radiographic criteria for knee OA. Venous blood samples were obtained from all cases as well as controls for genetic analysis. Polymerase chain reactions were performed for SNP analysis using specific primer.
Results: A total of 200 cases that confirmed radiographic knee OA and equal number of age and sex matched healthy controls were enrolled. There was no significant difference in demographic characteristics between the cases and controls. A SNP (rs6494629 and rs2289263) mapping to intron 1 of SMAD3 was associated with knee OA ($P < 0.013$ and $P < 0.044$, respectively). Within the SNPs (rs6494629) of Smad3 gene, genotype CC and CT was found to be significantly ($p<0.013$) associated with knee OA as compared with the CC genotype and SNP rs2289263,genotype CC and CA was found to be significantly ($p<0.044$) associated with knee OA as compared with the AA genotype In addition when alleles were compared, C allele of both the studied SNP was observed to be significantly associated with knee OA.
Conclusions: Our data indicate that genetic variation in the SMAD3 gene is involved in the risk of knee OA in North Indian populations, confirming the results from previous studies on the potential importance of this gene in the pathogenesis of OA.

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IMPORTANT DIFFERENCES IN THE NETWORKS OF PHYSICIANS WHO TREAT TOTAL HIP REPLACEMENT PATIENTS IN COMMUNITIES WITH HIGH VS. LOW PROPORTIONS OF AFRICAN AMERICAN RESIDENTS

H. Ghomrawi †, R. Funk ‡, J. Owen-Smith §, J. Hollingsworth §. † *Weill Cornell Med. Coll., New York, NY, USA;* ‡ *Univ. of Minnesota, Minneapolis, MN, USA;* § *Univ. of Michigan, Ann Arbor, MI, USA*

Purpose: Racial disparities in total hip replacement (THR) are well documented. Blacks utilize THR at a 40–50% lower rate than whites.1 Blacks who do utilize TJR are less likely to receive surgery at high volume hospitals, which are associated with better outcomes,2,3 and blacks have a 24% higher rate of 30-day post-TJR complications.2 These disparities have persisted over the past 2 decades. To close the racial gap, significant attention has been devoted to educating African Americans about the benefit of this procedure; however, provider-level and system-level factors, beyond the patient's control may also be affecting their utilization of this effective and cost effective procedure. Recent evidence from other areas of medicine suggest that the network of physicians that a patient "belongs to" may play an important role in racial and ethnic disparities. A physician network is a community of physicians who share common patients.5 We explored whether THR patients in communities with high proportions of African Americans had access to physician networks that exhibited characteristics more likely to discourage utilization than THR patients in communities with low proportions of African Americans.
Methods: We applied network detection algorithms to a national sample of Medicare Part A and B claims and the Carrier File from 2008–2011 to identify hospital-based physician networks of all patients who had THR in that hospital. We calculated network-based characteristics (repeat-tie fraction, clustering, and external ties) for networks in hospital service areas (HSAs) with high and low proportions of blacks. Repeat-tie fraction reflects the tendency for physicians in a network to have worked together in the past, and was calculated as the proportion of physician pairs in a network that shared 2 or more patients in common. Clustering refers to the tendency for physicians in a network to assemble into tightly interconnected clusters (referred to as cliques) around shared patients and was calculated as the probability that 2 physicians in the network—each of whom shared a patient with a common third doctor—also shared a patient themselves. External ties represent the tendency for physicians to share patients with practitioners outside of their immediate area and was calculated as the total physicians in a given network who practiced outside the core-based statistical area where the network's sample hospital was located. We then estimated regression equations of the effect of being in HSA with high and low proportions of blacks on each of the 3 network characteristics, adjusting for patient-level, hospital-level, and HSA level characteristics.
Results: Our sample included 12,179 THR patients. HSAs with high proportion of blacks had a higher proportion of residents under poverty line, higher number of acute beds per 1000 residents, higher number of medical specialists per 100,000 residents, and the lower number of surgeons per 100,000 residents in HSAs with high proportions of African Americans. There were statistically significant differences across most measures at the hospital level; the hospital was more likely to be affiliated with an academic institution and hospital patients had a higher mean Charlson score. In the multivariable analyses, physician networks in communities with high proportions of blacks were more likely to cluster together (coefficient=0.08, $p<0.001$) and less likely to have external ties (coefficient=−1.92, $p<0.0001$).
Conclusions: Physician networks caring for THR patients in communities with high proportions of blacks appear to have different structural characteristics. They primarily are more likely to cluster and less likely to have external ties, which suggests isolation of these physicians. These results should be investigated further and may have important implications for policy interventions aimed at reducing these racial disparities.

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USE OF PHYSICAL THERAPY AND CORTICOSTEROID INJECTIONS IN THE MANAGEMENT OF KNEE OSTEOARTHRITIS IN THE U.S. MILITARY HEALTH SYSTEM

D. Rhon †, B. Hando ‡, G. Deyle †. † *Brooke Army Med. Ctr., San Antonio, TX, USA;* ‡ *Natl. Defense Univ., Fort McNair, DC, USA*

Purpose: The prevalence of osteoarthritis (OA) in active duty military members is much higher than age-matched groups in the general population. OA is one of the most common and costly conditions encountered in military healthcare. Physical therapy management has been shown to result in clinically relevant improvements in pain, function and disability levels in patients with knee OA. However, several studies have shown that in civilian healthcare settings, very few patients with knee OA receive physical therapy treatment. To date, no data exists on the utilization and timing of healthcare services for this population in the military healthcare system. The purpose of this study is to determine the utilization rates and timing of physical therapy services for patients with knee OA in the military healthcare system.
Methods: This was a retrospective review of data extracted from the Military Health System Data Repository (MDR) from 2008 to 2013. Patients presenting to a primary care clinic for a knee OA diagnosis without any care for that diagnosis in the preceding 12 months were included in the analysis. The date of diagnosis in the primary care clinic became the "index date" and healthcare utilization was examined for a 12-month period following the index date. Utilization and timing of physical therapy and corticosteroid injections were analyzed for the management of each patient for that 1-year period.
Results: There were 135,049 unique patients across the entire MHS that met the criteria during this 5-year period. Within the 1 year of care following diagnosis, 40.0% of patients received a corticosteroid Injection and 29.2% of patients received physical therapy. Only 12.9% of patients received both physical therapy and a corticosteroid injection during their 1-year course of care. Timing of interventions also varied. For corticosteroid injection, 50.9% received a CSI within 30 days of the