

Study links common male medical condition and vascular disease

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Men who suffer symptoms from varicoceles, enlarged veins in the scrotum, are more likely to develop vascular disease and metabolic disease, such as diabetes, according to a study by Stanford University School of Medicine researchers.

Michael Eisenberg, MD, assistant professor of urology, and his team mined data from thousands of medical insurance records to see whether the condition, previously linked to infertility, also puts men at higher risk for other health problems.

Their findings will be published online Dec. 1 in *Andrology*. Eisenberg is the senior author. Urology resident Nancy Wang, MD, is the lead author.

About 15 percent of American men are estimated to have varicoceles, dilated veins in the scrotum. The enlarged veins are thought to allow more blood to flow through the scrotum and raise its temperature above normal levels. The heat can impair testicular function leading to lower sperm and testosterone production. The condition also can cause pain or shrinkage of the testicles, but often results in none of these symptoms and is left untreated.

"To millions of men that are diagnosed with this, a lot of them are told, 'Don't worry about it,'" Eisenberg said.

Varicoceles are treated for infertility and pain, but other risks may be going unchecked. "Varicoceles are associated with low testosterone, and

low testosterone in turn is associated with metabolic risks and heart disease," Wang said. No one has connected the dots between varicoceles, testosterone and these conditions before now, she said.

A strong correlation

For the study, Eisenberg's lab dug through a wealth of data housed in the Truven Health Marketscan Commercial Claims and Encounters database, which contains insurance claims filed by 77 million individuals since 1996. Between 2001 and 2009, the researchers identified more than 4,400 reproductive-age men with diagnosed varicoceles. For comparison, the team also looked at men without varicoceles—a group that included both infertile and fertile men, differentiated based on whether they had received infertility screening or a vasectomy.

The team followed the subjects through time, noting their health status up to about three years out from their diagnoses. They monitored whether the men developed metabolic or vascular disorders.

Compared to men without varicoceles, men with the condition had a significantly higher incidence of heart disease, the researchers found. They also had a higher incidence of diabetes and hyperlipidemia, or high concentrations of fat in their blood.

For the most part, only symptomatic varicoceles are treated in the clinic. Asymptomatic varicoceles—those that don't cause pain or impair reproductive function—are only monitored. But the researchers wondered whether both types increase men's risk of developing other diseases and decided to look closer at the data to answer this question.

The team categorized the men with varicoceles by the symptoms they showed, if any, and found that men with asymptomatic varicoceles had no increase in their incidence of [heart disease](#), diabetes or

hyperlipidemia relative to men without varicoceles. Only men with symptoms, especially fertility problems and scrotal pain, showed increased risk of developing these diseases.

The results suggest that monitoring for asymptomatic varicoceles remains reasonable, said Eisenberg. "If it's truly asymptomatic, observation remains appropriate," he said.

Although the study produced strong results, it also had limitations, the researchers wrote. The MarketScan Database collects data from a subset of privately insured individuals and may not represent all American men. Those diagnosed with varicoceles are known to have sought out specialist care, which constricts the sample further. In addition, the data lack details about how the varicoceles were diagnosed and how specific symptoms were recorded, and follow-up data was limited to a few years after diagnosis; disease development beyond that window was not available.

In the last few decades, the rates of cardiac, metabolic and [vascular diseases](#) have increased across the United States. This study holds out the possibility that varicoceles may provide a window into the future health of men.

"The development of these diseases is usually pretty silent," Wang said. "It's interesting to think about ways to catch disease early, or see risk factors you can identify, to prevent their development or progression."

Going forward, Eisenberg hopes to determine the specific role of varicoceles in metabolic and vascular disease. He said he has uncovered a strong correlation but needs to dig deeper to know if varicoceles play a causative role in these conditions. If they do, the question becomes whether varicocele treatment could help prevent later disease.

"While these results make a strong case that varicoceles are associated with higher risks of cardiovascular diseases and diabetes, we do not yet know if we will need to change our present management for the estimated 17 million U.S. men with varicoceles," said Keith Jarvi, MD, director of the Murray Koffler Urologic Wellness Centre and head of urology at Mount Sinai Hospital in Toronto, who was not involved with the study. "The big question is, 'Is a varicocele just a marker of men's health or could repair of the varicocele actually improve men's health in the long term?'"

Provided by Stanford University Medical Center

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