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Jefferson scientists find high glucose before surgery raises risk of dangerous complications

(PHILADELPHIA) Patients who have high blood sugar before undergoing surgery run an increased risk of developing blood clots, deep vein thrombosis and even pulmonary embolism after surgery.

Boris Mraovic, M.D., assistant professor of anesthesiology in the Artificial Pancreas Center at Jefferson Medical College of Thomas Jefferson University in Philadelphia, and his colleagues examined records of nearly 6,500 hip or knee replacement surgery patients at Thomas Jefferson University Hospital who were admitted between 2003 and 2005. They asked what happened to patients with high blood sugar that wasn't well controlled prior to surgery.

Of these patients, 38 had very high blood glucose ‚more than 250 mg/dl ‚on the day of preoperative testing and the day of surgery. The team found that approximately 10.5 percent of the patients with high blood sugar developed a pulmonary embolism, a life-threatening condition in which blood clots travel to the lungs, after surgery, a rate that is 6.2 times greater than would be expected in the general population. The researchers report their results on October 15, 2006 at the annual meeting of the American Society of Anesthesiologists in Chicago.

"These data suggest that if an individual has high blood glucose and is coming for surgery, he or she should correct it first and probably postpone the surgery," says Dr. Mraovic.

Physicians should also be aware of these risks, he notes, and should make it a priority to be sure that patient glucose levels are under control prior to and during surgery.

Dr. Mraovic says that as many as 25 percent of all surgery patients come to the hospital with high blood sugar. Another 10 percent have raised levels due to pre-surgery stress. Deep vein thrombosis occurs in approximately two million Americans each year. Pulmonary embolism

(PE), which can cause sudden death, occurs when a clot dislodges from the vein and circulates into the lungs. Each year some 600,000 patients develop PE, which causes or contributes to as many as 200,000 deaths annually in the U.S.

He notes that recent studies have begun to show connections between increased blood sugar and a greater risk of dying or of medical complications for hospital patients in intensive care or cardiac care units. Tightening glucose control dramatically cuts those risks, as well as reduces hospital stays.

Because the current study was retrospective, Dr. Mraovic says, drawing firm conclusions from the results can be difficult. The findings need to be confirmed in a randomized, prospective trial.

He would like to next find out whether controlling blood sugar before and during surgery could actually result in a lower risk of blood clots and pulmonary embolism. He also would like to explore some of the potential physiological mechanisms related to increased blood glucose and blood clotting.

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