
News Release

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VIDEO ALERT: Embargoed audio and video of Dr. Rajkumar discussing the study is posted on the [Mayo Clinic News Blog](#). The password is lightchain.

EMBARGOED: Hold for release until Monday, June 04, 2012, 12:01 a.m. EST
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Mayo Clinic IDs Immune System Glitch Tied to Fourfold Higher Likelihood of Death *High levels of antibody molecule linked to increased rates of death from all diseases*

ROCHESTER, Minn. — Mayo Clinic researchers have identified an immune system deficiency whose presence shows someone is up to four times likelier to die than a person without it. The glitch involves an antibody molecule called a free light chain; people whose immune systems produce too much of the molecule are far more likely to die of a life-threatening illness such as cancer, diabetes and cardiac and respiratory disease than those whose bodies make normal levels. The study is published in the June issue of *Mayo Clinic Proceedings*.

Researchers studied blood samples from nearly 16,000 people 50 and older enrolled in a population-based study of plasma cell disorders in Olmsted County, Minn. They found that those who had the highest level of free light chains — the top 10 percent — were about four times more at risk of dying than those with lower levels. Even after accounting for differences in age, gender and kidney function, the risk of death was roughly twice as high.

The study suggests that high levels of free light chains are markers of increased immune system response to infection, inflammation or some other serious disorders, says lead researcher [Vincent Rajkumar, M.D.](#), a Mayo Clinic hematologist.

Researchers have known that high levels of free light chains are associated with increased risk of death among patients with plasma disorders, such as lymphomas and other blood cancers, but this is the first study to find that high levels of light chains are associated with increased mortality in the general population. Free light chain levels can be measured by using a serum free light chain assay, a simple blood test. This test is often used to monitor light chain levels in patients with plasma disorders such as myeloma to gauge how well they are responding to treatment.

However, Dr. Rajkumar cautions against administering this test with the intent of gauging one's risk of death.

“We do not recommend this test as a screening test, because it will only cause alarm,” Dr. Rajkumar says. “We do not know why this marker is associated with higher rates of death. We do not have a way of turning things around. Therefore, I would urge caution in using this test until we figure out what to do about it and what these results mean.”

Plasma cells are white blood cells that produce large amounts of antibodies and are key to fighting off infection. The antibodies are comprised of two different types of molecules tightly joined to each other: heavy chains and light chains. Most people produce at least a slightly excess amount of light chains that can be detected in the blood in the “free” state, unbound to heavy chains. Free light chains are not usually a threat to health, but excess levels serve as a marker of underlying immune system stimulation, kidney failure or plasma cell disorders such as myeloma.

Next steps for researchers include identifying the precise mechanisms by which excess free light chains are associated with a higher likelihood of death and determining if specific diagnostic or treatment options need to be pursued.

The study was funded by the National Institutes of Health. Freelite, the manufacturer of the serum free light chain assay, provided the serum free light chain assay reagents for this study.

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