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I'm Vincent Rajkumar. I'm a professor of medicine at Mayo Clinic in Rochester, Minnesota. This was a very large study looking at disease associations that occur in patients with monoclonal gammopathy of undetermined significance. Now monoclonal gammopathy of undetermined significance, or MGUS, occurs in over 3% of the general population over the age of 50. And because it is so prevalent, a number of different diseases-- over nearly 75 different diseases-- have been associated or reported to be associated with the MGUS. The main problem with MGUS is that it puts the patient at risk for a cancer called multiple myeloma.

What we did was, for the first time, we screened virtually the whole population in Olmstead County for the presence or absence of MGUS. And we captured most of these people. This has been already reported. In this study, we looked at all of the 16,000 different diseases that are in the disease codes and the prevalence of these diseases in patients with MGUS and patients without MGUS.

And by doing this, we are able to find which of the associations with MGUS are real and which are probably coincidental. And we were able to confirm that 14 out of the 75 reported associations are real and are significant in our study. And 61, we think are probably coincidental. Although we may be having some false negative rates here, we are able to say that most of these associations are probably coincidental.

In addition, we have reported about 30 or 40 new associations that have not been previously reported in the literature that we think warrant further study. We get referrals from neurologists saying, my patient has motor neuron disease and happens to have a monoclonal gammopathy. Is the monoclonal gammopathy causing the motor neuron disease? Are these related or not?

Our study would say that the previous associations that were thought to be between these two diseases are likely coincidental, that MGUS is highly prevalent and the same with motor neuron disease, and MGUS association is just one of chance. And so now we can reassure the patient that they probably don't need treatment for the monoclonal gammopathy and that the motor neuron disease is a separate entity.

The same way for a number of the other 60 different diagnoses-- we can say that the relationship between MGUS and this disease was probably coincidental. And so the treatment implications are there. The followup implications are there.

What do our findings mean for patients? A number of patients have monoclonal gammopathies, and they're going to be diagnosed with various diseases during the course of their life. Other than multiple myeloma or the 12 or 13 other diagnoses that we think are truly related to the MGUS, other diseases that they have they probably don't need to worry about as ones that are due to the monoclonal gammopathy. And they may just get treatment appropriate for the disease rather than trying to target the monoclonal gammopathy. Oftentimes, this is important because the only way to treat the monoclonal gammopathy is to use chemotherapy like we would use for cancer. So the fact that many of these associations may not be real is actually very helpful to patients in reassuring them that they can just be treated like anybody else who has the disease.

So for example, a patient with motor neuron disease and monoclonal gammopathy, I would be able to tell your treatment for the motor neuron disease should ignore the diagnosis of monoclonal gammopathy and just treat the motor neuron disease. If you're going to have a renal disease that is previously thought to be related to MGUS, we can now tell the patient that this is probably a coincidental association and that your renal disease should be managed just like anybody else's renal disease would be managed if they did not have MGUS.

Over the years, numerous diseases have been thought to be related to MGUS. And we have a table in the paper which lists some of these-- rheumatoid arthritis, pulmonary tuberculosis, lupus, various kinds of infections, many other cancers. And when we look at the incidence of these in patients who have MGUS and patients who don't have MGUS, we actually find that there is no significant difference.

And so all these presumed associations in the past were probably coincidental purely because the high prevalence of MGUS in the general population. If you have a condition like MGUS that's present in 3% or 4% of the general population, in virtually any disease, you would find 3% to 4% of patients would have an MGUS with that. To really make it a real association, you need to show that MGUS is far more common in patients with a particular diagnosis than those who without. Even though I think we had a sample size of over 17,000 and we looked at over 16,000 diagnosis codes, this is still, believe it or not, not a large enough study to definitively exclude an association.

So we have published, along with this paper, an appendix of all of the 16,000 diagnosis codes and their probability of occurring in patients with MGUS and those without MGUS. And any author or researcher who is interested in a particular disease and whether that disease is related to MGUS can go and look at the actual raw numbers. And they can decide for themselves whether our results are under-powered. And they can do a separate research study if they find our findings are provocative enough that they can follow up and do other studies to confirm or refute what we're finding.

Because monoclonal gammopathy of undetermined significance is so common, many, many internists will know about it. And it's usually a condition picked up by internists. What they need to know now is that there are certain diseases that we have known for many, many years to have a real strong relationship with MGUS, and those are true-- multiple myeloma, amyloidosis, Waldenstrom's macroglobulinemia, lymphoplasmacytic lymphoma.

Besides those, our study finds certain other new associations which seem to be important to keep in mind. One is the risk of fractures, particularly of the vertebra and the clavicle, which seem to be more common in patients with MGUS, even before they get myeloma. There seems to be a higher risk of blood clots in these patients, and that needs to be kept in mind. Surprisingly, there seems to be a lower risk of high cholesterol and high lipid levels, which is more like a protective thing. And these are some of the disease associations that we think they need to pay more close attention to. The vast majority of the other disease associations, they can probably say is likely coincidental and reassure their patients.