

Mayo Clinic Q&A – Dr. Gosia Wamil - Cardio-diabetes connecti...

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SPEAKERS

Dr. Halena Gazelka, Dr. Malgorzata Wamil, Narrator

N Narrator 00:01
Coming up on Mayo Clinic Q&A,

D Dr. Malgorzata Wamil 00:03
The risk of death in people with diabetes, the risk of death due to heart disease is approximately four or five times higher than in general population.

N Narrator 00:14
Diabetes and heart disease often go hand in hand. In fact, if you have diabetes you're twice as likely to have heart disease than someone who doesn't have diabetes. But you can lower your risk by keeping your blood pressure under control and making certain lifestyle changes.

D Dr. Malgorzata Wamil 00:30
And we showed that reduction of blood pressure can reduce the risk of diabetes, so we understand now that there are strategies that everyone can employ. So, reducing weight, increasing the exercise level, and now using therapies of blood pressure lowering, could decrease that overall lifelong risk of patients with diabetes.

D Dr. Halena Gazelka 00:52
Welcome, everyone to Mayo Clinic Q&A. I'm your host, Dr. Halena Gazelka. The World Health Organization reports that the number of people with diabetes has risen from 108 million in

1980, to 422 million by 2014, and is estimated to reach 552 million people by 2030. One big concern of people with diabetes is the connection between diabetes and cardiovascular disease. People with diabetes are more likely to develop heart disease and are at higher risk of premature death. So, what can be done to help our patients? Well, here to help us discuss this today is Dr. Gosia Wamil, a cardiologist at Mayo Clinic healthcare in London. Welcome to the program, Malgorzata.

D Dr. Malgorzata Wamil 01:42

Thank you for inviting me. And it's lovely meeting you today. Thank you.

D Dr. Halena Gazelka 01:46

It's so wonderful to have you here to talk about this topic that I know is near and dear to your heart. So, tell us what is the connection between heart disease and diabetes? Is it an association, or does one cause the other?

D Dr. Malgorzata Wamil 02:01

So, the risk of death in people with diabetes, the risk of death due to heart diseases is approximately four or five times higher than in general population. And this obviously is a major concern. And there is now strong research evidence and scientific evidence that talks about this link and association between cardiovascular disease and metabolic diseases and especially diabetes. It's prompted over the last couple of years the major diabetology and cardiology societies to promote the management of cardiovascular diseases among diabetology to treat people with heart disease and diabetes by a specialist in a multidisciplinary team that will include also cardiologists. So, here we are, cardiologists now play an important role in the management of people with diabetes. We have over the last five years changed a whole paradigm of managing patients with diabetes. We now moved from the glucose centric towards an approach of managing multiple cardiovascular risk factors. We understand that if we strictly control glucose control to glucose levels in patients with diabetes, and only look at the hb1c, we cannot decrease their mortality from cardiovascular diseases. So, therefore the management of cardiovascular risk factors and by saying so I mean, the high level of cholesterol, their blood pressure, reduction of the patient's weight, improving the diet, increasing exercise level is extremely, extremely important in that population. So, we are paying lots of lots of attention to those additional risk factors. We also manage patients with diabetes not only by one speciality as it used to be historically by a diabetologist, but now many other specialists play important roles in this multidisciplinary approach to managing and treating patients with diabetes. And cardiologists now are one of the most important specialists involved in care of patients with diabetes.

D Dr. Halena Gazelka 04:33

Isn't that interesting? I've already learned something today, Gosia. I love that. What if someone is pre-hypertensive? Does that make them likelier to have pre-diabetes and vice versa? Or is the connection really seen in more advanced disease?

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Dr. Malgorzata Wamil 04:48

So, this is extremely interesting question. And a question that bothered me for a very long time. So, we knew for a long, long time that an anti-hypertensive, so blood pressure lowering therapy, is extremely important when we talk about treatment of patients with diabetes. Antihypertensive therapy reduces microvascular and macrovascular risks associated with diabetes. So, all those nasty complications that people with diabetes can develop. However, the connection between and the link between hypertension and diabetes has not been known that well. So, last year together with my colleagues in the sleep medicine department at the Oxford University, so we published a very large meta-analysis that included multiple randomized control trials are looking into investigating the different ways how we can decrease the blood pressure with diabetes, and we showed that reduction of blood pressure can reduce the risk of diabetes. And this has been extremely interesting. We have shown that even as such a small reduction in blood pressure as five millimeters mercury, really very, very small, can decrease the risk of future diabetes by 12%. So, this is a comparable effect to the one achieved by increasing exercise, by weight reduction. So, we understand now that there are strategies that everyone can employ. So, reducing weight, increasing the exercise level, and now using therapies of blood pressure lowering could decrease that overall lifelong risk of patients with diabetes. So, there are multiple of those different therapies, we have several biologics, a group of medications, so pharmacotherapy, that is used to lower blood pressure, and out of all of those therapies, so those drugs that we know very well, such as ACE inhibitors, so drugs that act through the RAAS pathway, those are the best and the most efficient in reducing the risk of diabetes to kidney disease and all other complications of diabetes. So, very, very interesting new findings.

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Dr. Halena Gazelka 07:16

That is really interesting. Can an individual who has heart disease prevent the development of diabetes and vice versa, I guess?

D

Dr. Malgorzata Wamil 07:24

So again, a very, very important question. So, we know that there are risks associated with diabetes, and the risk associated with the development of a heart disease are very similar. So, these days we focus our attention on management of cardiovascular risk factors. We know that, for example, the weight reduction translates into reduction in the risk of diabetes, but also reduces the risk of heart diseases. And so, those important lifestyle changes can reduce the risk of both conditions, and most importantly prolong a patient's life.

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Dr. Halena Gazelka 07:28

So, if you have a patient who has both cardiovascular disease and diabetes, can those diseases in them be cured, or are we really looking at a management strategy?



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Dr. Malgorzata Wamil 08:20

So, diabetes and heart diseases are chronic conditions and as such are very rarely reversible or cured. And we know, and there have been some multiple scientific reports now showing that reduction of weight, a significant percentage of body weight loss can reverse diabetes. We're still slightly uncertain whether this is a long-lasting effect, and whether this would translate into reduction in heart diseases and mortality associated with the heart attacks, strokes, and so on. We also know from observations, and I think cardiologists have known this for a very long time, that patients with diabetes although they present with a similar pathology, so heart failure, coronary artery disease, heart attacks, strokes, that the pathology is slightly different. So, for example patients with diabetes, and approximately 50% of those that are diagnosed with diabetes during their life will develop what we call stiffening of the heart muscle, and then they are much more prone to development of fluid overload. Eventually, they may develop problems with pumping function of the main chamber of the heart, left ventricle and heart failure, but the disease starts in a slightly different way in other groups of patients. We are also very, very concerned that patients with diabetes are at high risk of premature accelerated coronary artery disease. So, they frequently have damage to the nerves, they may not experience the same type of symptoms as people who do not have diabetes. So, for example, it may be rare that the patients with diabetes, long-standing diabetes, will complain of chest pains, angina type of chest pain, but when they present the present very late in the course of the disease, when there has been already quite a significant damage to the heart muscle. So, these days, we focus on prevention, we focus on early detection of all those pathologies. We use non-invasive cardiac imaging such as echo, cardiac CT, cardiac MRI, to detect the early signs and features of those diseases. It's so important because there are new treatments, and there is so much more that we can do these days for our patients. So, there has been a significant development and introduction to the national international guidelines now of two large groups of tracks as GLD-2 inhibitors and GLD-1 receptor agonists. So, both of those groups of drugs, so there is lots of lots of data, very strong scientific evidence proving that those medications of that therapy can reduce the glucose level, but at the same time, prevent from development of those nasty heart diseases associated with diabetes. So, I think the future looks promising.

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Dr. Halena Gazelka 11:44

That's amazing. I feel like I'm learning so much from you today, Gosia. And, you know, we've been talking about COVID for a couple of years now, and all the developments that are happening there. But still, there is a lot of work going on in diseases that we had far before COVID and that will follow us far after. So, very interesting. I'm wondering what you tell your patients who have heart disease and diabetes, what they can do to improve their quality of life.

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Dr. Malgorzata Wamil 12:12

So, that's the important point, something that we consider quite a lot in our current diabetic clinics. So, we try to develop personalized management plans. We listen to our patients and try to understand what are the steps that they can take to improve their quality of life, to improve their future life and their health. So, the most important thing that patients can do is to start exercising more. We know that exercise is a simple measure. It's been there for 1000's of years. But it's only now that we are learning, and we are developing scientific evidence to prove those beneficial effects of exercise. So, we do tell and encourage our patients to exercise. The guidelines these days will suggest 250 minutes of exercise per week. And if our

patients are those that have established heart diseases, we probably would suggest to start with a gentle exercise such as brisk walking, so 30 minutes of brisk walking three times per week and so on, and then to build their fitness and increased the exercise level. But yes, exercise is a very simple measure that everyone can start, and it has been, there is a strong scientific evidence to prove that exercise can improve health and quality of life in our patients.

D Dr. Halena Gazelka 13:50

It seems like eating well and exercising are always at the top of the list of things that a person should do for themselves for almost any disease. Gosia, what are the main questions about the interaction or interplay between heart disease and diabetes that your research focuses on?

D Dr. Malgorzata Wamil 14:12

My research focuses on the link between diabetes and heart diseases. I use advanced cardiac imaging techniques, such as cardiac MRI with novel tissue catheterization techniques to try to understand the mechanism that explains why heart tissue of patients with diabetes would not recover as well as in other patients after heart attack. So, we have observed that people with diabetes have poor healing of the hearts and after a heart attack, they are more at risk of developing heart failure. So, we are trying to understand whether that mechanism could be addressed and whether a new therapy could be employed to prevent this. Last year, I have also to used say in collaboration with my colleagues in Oxford, and a database of one of the largest first landmark randomized control trials called UKPDS. And we have shown that, for example, a simple, very cheap blood test measuring insulin resistance at the time of a new diagnosis of diabetes can predict the lifelong, the future risk of developing heart failure. In my current research, I also collaborate with data scientists in Oxford. And we try to use novels of deep learning methodology to stratify patients with diabetes. So, we use a large database. So, electronic healthcare records, with 60 million of patients registering in the UK, we stratify them, we try to identify groups of patients that would have a much higher risk of developing of certain clinical outcome. And then by doing so we can apply our novel therapies that have been developed to those patients and those groups of patients that will benefit most of those of them. So, this is extremely heterogeneous disease, there are many subtypes. There are very different presentations and different outcomes, and so-called personal risk management plans is probably very important and will be playing a very important role in future in managing of diabetes. So, we strongly believe that artificial intelligence and algorithms that the deep learning can develop can help us a lot in improving the way how we manage that diverse and heterogeneous group of patients.

D Dr. Halena Gazelka 16:58

Isn't that interesting, because what I learned in medical school many years ago was that there are basically two types of diabetes. People required insulin, or they did not require insulin. So, it is very interesting that there are many types.

D Dr. Malgorzata Wamil 17:11

So, it's still true, and that hasn't changed. However, the population of patients with diabetes is

So, it's still true, and that hasn't changed. However, the population of patients with diabetes is increasing in prevalence, and we are identifying patients who may be more appropriate for specific targeted treatments that are available in the cardiology field. And this is the reason, the main reason, that drives the development in that field.

D Dr. Halena Gazelka 17:38

Are you seeing any interesting or exciting developments either in your research or others in the prevention and treatment of diabetes and cardiovascular disease?

D Dr. Malgorzata Wamil 17:50

So, we have over the last five years, maybe have a few more, and the cardio diabetic fields has been exploding with the developments and excitement. So, we have observed an introduction of two large groups of pharmacotherapy. So, sglt2 inhibitors used initially only for patients with diabetes, and these days, introducing the guidelines for the treatment of heart failure. And the other second group, exciting group is an rgl1 receptor agonist that offer a promise that they could reduce the risk of future heart attacks and coronary artery disease. So, this has been extremely exciting, because for the first time, we as cardiologists can also offer some treatment that can stop the progression of heart diseases in that group of patients. There has been lots of lots of excitement in the development of non-invasive ways of imaging, such as cardiac MRI, cardiac CT, echo, with a strain imaging, and so on. So, all the advanced techniques that help us to identify early signs of the disease. I see a major need for this. Currently, in the midst of applying those techniques in and testing those techniques in larger randomized controlled trials prospective studies, trying understanding whether they could be applied and used in screening of asymptomatic patients with diabetes. I think this is the most important question that we will need to answer over the next couple of years.

D Dr. Halena Gazelka 19:38

How very interesting. What a fascinating discussion. Thank you very much for being here today.

D Dr. Malgorzata Wamil 19:44

Thank you for the discussion, and thank you for inviting me.

D Dr. Halena Gazelka 19:49

Our thanks to Dr. Gosia Wamil, cardiologist at Mayo Clinic healthcare in London for being here today to talk with us about the intersection between cardiovascular disease and diabetes. I hope that you learned something. I know that I did. We wish each of you a wonderful day.

N Narrator 20:06

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