Vascular Interview - Professor Gianesini

Welcome to Vascular Experts, medical talks on vascular disease. We have the pleasure today to be here with Professor Gianesini, who is a vascular surgeon at the University of Ferrara, professor at Bethesda in the USA, Emeritus President of v-WIN, President of UIP since 2023 until 2027, and pioneer in the research of the glycocalyx. It's a pleasure to have you, Sergio.

Welcome. It's a joy for being together here. Thank you.

So thank you very much to be here. So you're very known as an expert in the glycocalyx, but actually, if we start with that, why is the glycocalyx so important?

I love you say like the word starting, because I was really fascinated by a video I watched from Britannica that was showing how we come from life in the oceans, right? And if you go back to the oceans, you see the origin of life on the surface of the corals. In this nice video that I suggest you to really watch, you see these ciliary structures that are moving based on the flow.

And if the flow is a nice flow, the message that the coral receives from the ciliary structures is to grow naturally and beautifully. But if there is turbulence to heavy ones, they are going to die, basically. And isn't it fascinating that if I show you an electronic microscopy image of our vessels on the endothelium lining, you're going to see the same, basically, ciliary structures that we call glycocalyx, that is translating like the ocean's water, the blood flow, into a pro-inflammatory or anti-inflammatory message.

So really reminding us that we come from the oceans and that the evolution is inside us. So it's a very fascinating topic that we explore with very authoritative universities, also for which we did some publications, also with Harvard and Stanford. We are really grateful for this teamwork that brought together, of course, clinicians, but also basic scientists.

Okay, that's actually really fascinating. I love the metaphor, also about the ocean, when we know how important the ocean is to planet Earth. I believe then that also really underlines the importance of the glycocalyx.
So maybe a question related to that is biosignaling. So what is biosignaling, actually?

Biosignaling is exactly what I said before in a more technical way. So it's how the physical force of our blood flow, but also lymphatic flow potential, as we will discuss probably later, is translated into a biochemical message.

So now getting more clinical and medical, if you have turbulence in our arteries or veins, the kind of message that the endothelium, that is a critical signaling platform, thanks to this glycocalyx is transmitting, is of all is fine, so no activations of defense system of our organism, or there is a signal of need to repair. In particular, need to repair the glycocalyx that has been defined, indeed, an innovative treatment target, even if I think that it's not so innovative, because we have serious literature that has been showing how the glycocalyx can be extremely useful for arteries, veins, and now we put also some very important publication on the lymphatics, because we identified this glycocalyx for the first time in the human, and this is really paving the way for understanding better the mechanism of edema control, and therefore connecting veins and lymphatics as our big leaders from the past, the president of the UAP, Parshav, years ago already talking about veins and lymphatics as a family affair. So I think the biosignaling is really taking us to the next level, also clinically speaking.

Okay, wow, that's really fascinating, and you really explain well how complex it is, but also the advancements we had in the science, thanks to the work that is done day to day. But if we now look at the future, not only today, what are the next clinical steps?

Well the steps, and you're using perfect terminology, steps. So I think steps is a part of the translation of medicine, right? So we walk from the bench to the bedside to improve our patient care.

In this case I would say we are doing the reverse, because we were like on the operating bed collecting the lymphatics and the veins to look at this glycocalyx, very fascinating structure, brought back into the lab, analyzing the lab, understanding that restoring the glycocalyx is basically, I don't want to say the word kill, but you know there is the slang of killing two birds with one stone. Here we are basically killing three enemies of our health, that is of course arterial disease, vascular disease in terms of venous disease, but also lymphatic disease. Consider that edema remains there even after we fix the macroscopic reflux of the veins.

So the next step I think is what we have defined also in a very brilliant meeting that we just finished, is the exo-endo-synergy that you have in the vessel, inside and out, so translational also in this sense, where you are basically not treating just venous disease or arterial disease or lymphatic disease, acting on this common denominator I think the next step is curing the pan-endotheliopathy of the vascular system.

Okay, that's very interesting and I know you have your own definition also of CVD, maybe do you want to tell us more about that?

Yeah, I just mentioned before, we just finished a very interesting meeting that was all focused on the endo-exo-synergy in the vascular system, so I am proposing to the global community that when we are talking about a CVD that usually is chronic venous disease, for sure we should add a little bit of an L, because when you are talking about veins, it's a family affair, the fact that you should also talk about lymphatics, I am talking about family affair because there is a publication in Phlebology Journal 2014 of Partsch and BVD talking about the family affair. But we should maybe also include the arteries.

We should really send out a call, so thank you also for this opportunity, to all the ones who are dealing with the arteries to remember the veins. There is a very nice publication that is showing that of all the patients treated for arterial disease, peripheral arterial disease, 20% of these patients are having chronic venous disease, that only 1 out of 5 of those 20%, so 20% of the 20%, are actually even diagnosed. So not even treated, just diagnosed, all the other ones are lost.

So we should really, in this very hyper-specialised medical world, be cautious in of course increasing the hyper-specialisation, but also finding a way to endorse in a holistic approach the patient care, and again the glycogenics is very democratic in this sense, because it's offering you the opportunity to act on the 3 different levels of the vascular system.

Source: Partsch et al. Phleb. And Lymph. 2014 Dec; 29 (10):645-7

Ok, great, and you did mention it with the very powerful metaphor, killing 3 birds with one stone, so great, really easy to understand. And I really want to thank you Professor Gianesini for joining us on Vascular Experts Medical Talks on Vascular Diseases, and tune in for next episodes as well on the platform.
Thank you again Professor Gianesini.

Thank you so much, it's been a pleasure.