

Title: EHRA 22: Precision Medicine Approach to AF

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Dr Di Biase:

- Hello. I'm a Professor Luigi Di Biase from the Albert Einstein College of Medicine at Montefiore Hospital in New York.

The precision medicine approach to AF post-ablation occurrences

Dr Di Biase:

So, precision medicine approach for recurrence of atrial fibrillation ablation is something very interesting to discuss and to present. There is no doubt that any type of atrial fibrillation has recurrence. And for many years, recurrence has been attributed to PB reconnection, with more technology, more experience. And today I would say that average operator is able to achieve durable pulmonary vein isolation but still we have recurrence of weight of relation, no matter if this is persistent, long-standing persistent, or paroxysmal.

So, can we identify with precision medicine, artificial intelligence, machine learning, can we identify which are the patient that will at least respond to PV isolation and the one that will not respond to PV isolation where something else needs to be done? I think this type of approach is innovative and new and it's something that needs to be developed.

Latest advances in this field

Dr Di Biase:

The latest advance in the field of machine learning, precision medicine is probably the eye of the human is enabled on its own or just by statistical analysis of big series of patient is unable to identify and predict which patient will respond to what, which therapy. So, can, a computer a software an algorithm be able to do that?

Well, we have been utilising a lot of clinical parameters to predict response to an ablation. And this can go from biomarkers several have been introduced, genotype screening, family screening imaging. There are many imaging techniques that's been utilised like using the strain versus no strain using MRI or using CT scan to do that but can an algorithm reviewing this imaging, reviewing this data be able to predict that and do it in a better way? I think there's a lot of literature in regard to that. And I think this is very promising.

Further research required

Dr Di Biase:

I think that the research still required is something that I would to make an analogy with cardio resynchronization therapy. In cardio resynchronization therapy, we know which are the patient responding to the procedure. We still don't have a way to predict which patient will respond, but we know that patient with a QRS duration more than 150 female gender are patients that are going to respond better to the therapy. Can we apply this concept to ablation?

I think the bigger problem is that we are so attached to the definition paroxysmal non-paroxysmal. I think this definition based on timing is wrong. I think we should try to base on

clinical characteristic of the patient imaging, and genotype and many more information, do some calculation and say, okay I know this patient will respond to PV isolation only. And I know this patient will not respond to PV isolation only, then we need research to say, okay when they don't respond to PV isolation only what are the area that needs to be targeted? And this is the posterior wall or the coronary sinus or the left atrial appendage or the superior vena cava or none of this, or the vein of Marshall. I mean, I think that a software, a technology that is beyond the eye of the human will be very useful for this.

Advice for clinicians

Dr Di Biase:

It's very important to try to be open minded and implement new techniques, everything new, always create some barriers. But I think that, researcher needs to be open minded. I think there's no doubt that, algorithms will help us to improve our work and improve the efficacy and the safety of our procedure. So, I think that the most important thing is to be open minded, if you are open minded and you will be able to implement anything that is there new outside and be able to do more procedure in a less time. I think for example, the new energy source PFA will pulse field ablation will help to, make sure that we do the procedure all in the same way. We can identify better which patient will respond to procedure A and which will not. And we will be able to basically utilise the patient that will not respond as a new strategy ablation for the future.

Take-home messages

Dr Di Biase:

My take home message is in 2022 we still do not understand very well. What is, which are the patient that respond to PV isolation alone. And we know that the majority are paroxysmal, we know that that the majority have no comorbidities and are young. And I think that the clinical message is early ablation rather than late ablation. This is extremely important. And the take home message is, we need more understanding of the mechanism of atrial ventilation in order to achieve a better outcome.