Webinar Q&A Report:
Cardiovascular Autonomic Dysfunction in the Post-COVID Landscape: Detection and Management

1. **Would you prefer active (in the middle of the room) or passive (leaning on the wall) standing test at the GP's office? Pros and Cons.**

   Artur Fedorowski, MD, PhD: My preference would be standing alone (i.e. not leaning against the wall) as this is what has been explored in many studies and is included in the guidelines. Please, see this paper for reference. For blood pressure, it might be important to place the arm at the heart level as an arm hanging down may make BP measurement a little bit too high due to hydrostatic effect.

2. **While you're considering Holter monitoring - what, if any, place do you see for heart rate variability in assessing autonomic dysfunction?**

   Artur Fedorowski, MD, PhD: Generally, a SDNN below 70 over 24h-period is considered abnormal. However, there are any studies exploring SDNN and other autonomic indices in patients with POTS and IST, so it is difficult to say what is abnormal in this patient group. We are currently working on a paper that could elucidate the normal and abnormal Holter values for POTS and controls. SDNN for post-COVID POTS was around 86, whereas it was above 100 for both non-POTS post-COVID patients and asymptomatic controls. I guess we will have reference values somewhere between 90-100 for unaffected individuals. All below this value (90?) will be seen as abnormal. But more studies and independent cohorts are needed.

3. **Have you found long COVID to affect menstrual cycles?**

   Artur Fedorowski, MD, PhD: Yes, many POTS -affected premenopausal long-COVID women report problems with their cycles. I do not have a clue at the moment why, though. Another point is that many of our patients do not report it as they are uncertain whether they "should" mention it while talking to a cardiologist. Probably, the best way is to tell about everything which feels "divergent" for the patient.

4. **I have seen similar POTS responses post-vaccination with out infection. Are you discriminating between post-vax and post-covid POTS in your studies?**

   Artur Fedorowski, MD, PhD: We accept any kind of referral, including self-referrals. As we are an

academic institution, we are open to all patients reporting COVID-19 related problems, including post-vaccination issues. I think that many patients are uncertain about the cause of their symptoms. We always document what trigger behind post-COVID issues is reported by the patient, and if it is vaccination, it will be documented.

5. **Is midodrine contraindicated in hyperadrenergic phenotypes?**

   Artur Fedorowski, MD, PhD: Following our recent findings of the so-called hypotensive tendency and low-blood pressure phenotype, we treat all patients with low blood pressure and hypotensive tendency with midodrine with a great success. If there is a "hyperadrenergic" type with a very high heart rate on standing and rather an increased blood pressure, we prefer beta-blockers but midodrine is added in case of the former. We perform 24-hour blood pressure monitoring to detect it.

6. **Can ventricular arrhythmia occur due to POTS?**

   Artur Fedorowski, MD, PhD: It is a very important question, but the reply is no. We have not seen it.

7. **Some POTS patients have profound brachicardia during sleep but high tachykardia during the day on standing - would that discourage from the use of Betablocker or Ivabradine?**

   Artur Fedorowski, MD, PhD: In such a case we prefer a modified dosage regime i.e., ivabradine at 8am and 4 pm or using only propranolol which has a shorter elimination time. In special cases, we may administer ivabradine only in the morning. For this purpose, a repeated Holter monitoring might be a good solution (when the treatment was started) to detect possible bradycardia during sleep. However, in some patients, bradycardia around 40 bpm during night might be acceptable.

8. **Is there a preference between active standing and head up tilt test for the diagnosis of orthostatic hypotension?**

   Artur Fedorowski, MD, PhD: Active standing test is always easier to perform and so is the interpretation. For study purposes, for more precise evaluation of orthostatic hypotension, in uncertain cases and for a more accurate diagnosis of so-called delayed orthostatic hypotension, tilt test is preferable provided there is an access to a lab with an appropriate equipment (continuous BP monitoring) and expertise. Please, see this paper.

9. **Many patients talk about spiking heartrate while sleeping, sometimes just from turning to the other side. Is there an explanation for this?**

   Artur Fedorowski, MD, PhD: This is a very interesting observation, but we do not have an explanation that we could offer at the moment.

Contact Details

If you have additional questions for **Artur Fedorowski, MD, PhD**, or Finapres Medical Systems regarding content from their webinar or if you wish to receive additional information about Finapres Medical Systems' products and services, please contact them by phone or email:

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