

*When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind.*

- Lord Kelvin (1883)

## Director's corner



Greetings!

The need to educate and disseminate ANS and ANS Monitoring with the help of our base of doctors who used the ANSscope, lead to the birth and creation of Measure.

The DyAnsys teams, along with its customers, have an unparalleled opportunity to be the global connoisseurs on the Autonomic Nervous System as a result of the ANSscope. We are the people who have our eyes and ears glued to ANS. This implies that we have the privilege of knowing more about it than 99% of all the doctors put together worldwide! The only exception would be the Members of the American Autonomic Society and the European Federation of Autonomic Societies, who are about 800 in numbers.

Our progressing and ever-evolving vision is that very soon there will be a textbook on ANS using the ANSscope to explain clearly and exhaustively as to what it is all about. The ANSscope would help the ANS Community gain insights that they would have otherwise not acquired.

Initially we had sold only into the Diabetes application and hence focused more on Diabetic Autonomic Neuropathy. This focus led us to a key insight – there is a level of confusion among people who associate autonomic dysfunction as a marker for diabetes. In fact, I have often been asked whether we could use it to predict diabetes! During the course of our work in this field, we have realized that ANS Dysfunction goes beyond diabetes. It has been a challenge explaining to people the fact that autonomic dysfunction is a problem of the autonomic nervous system. More importantly, it is a measure of the risk of cardiovascular disease, NOT diabetes.

(Contd.)

## Autonomic Neuropathy and Erectile Dysfunction

### Pro Profile

Conferred with an MBBS degree and followed by PGDHS ( Diabetologist ) Dr. Narayanmurthy Prakash set out on a journey to fulfil his aspirations. What resulted in course of time was "Ashwini Diabetic Care Centre" at Mysore, Karnataka, India. Over the years, the foundation has been

continuously modernized and upgraded resulting in a successful enterprise, with every conceivable facility to treat multiple disciplines of diseases and disorders.

Dr. N Prakash took time off from his busy schedule to explain "Autonomic Neuropathy" in this issue of DyAnsys 'Measure'.

### Doc Talk

#### KEY INSIGHTS

Though the impact of Diabetic Autonomic Neuropathy and the resulting complications are frequently seen and experienced in diabetics, the conditions remains under-diagnosed and ignored – this despite the fact that it has a serious impact on the survival and quality of life of patients with diabetes. Symptomatic autonomic complications are life-threatening, with estimates of mortality ranging from 25- 50% within 5-10 years of diagnosis. Diabetic neuropathy embodies a wide range of abnormalities within the peripheral nervous system (PNS) and is actually a number of different syndromes, each with a vast array of clinical and subclinical manifestations.

#### Erectile Dysfunction and Diabetes

It has also been estimated that about 35-75% of men with diabetes will experience at least some degree of Erectile Dysfunction, also called ED or impotence, during their lifetime. Men with diabetes tend to develop erectile dysfunction 10 to 15 years earlier than men without diabetes and as they age, erectile dysfunction becomes even more common. Above the age of 50, the likelihood of having problems with an erection occurs in approximately 50-60% of men with diabetes. Above the age of 70, there is about a 95% likelihood of having some difficulty with erectile function. Dyslipidemia may contribute to the development of diabetic neuropathy. Erectile dysfunction is a vascular disease (a blood vessel problem) and is often associated with other vascular diseases such as diabetes, high blood pressure or heart diseases. Men who are over 55 with erectile dysfunction have a 50% greater risk of developing heart disease than men without erection problems. Younger men with erection problems have even a higher risk of heart disease.

Why Do Men With Diabetes Have Erectile Dysfunction?

The reasons for erectile dysfunction in men with diabetes are complex and involve impairments in nerve, blood vessel and muscle function. Those who are experiencing erectile problems are, in all probability, not alone. Chances are, their spouse or partner is also affected. Fortunately, there is a lot that can be done by both the affected and their spouse/partner to overcome ED and enjoy better and more intimate sex life. Erectile dysfunction (ED) is common amongst men with diabetes and quite often, is the first symptom that they notice and visit the doctor for. Most often this is the first symptom that men may happen to notice and make a visit to the doctor for. Only after they have sought medical help for ED do they receive a diagnosis of diabetes. One out of every two men with diabetes will suffer from ED within 10 years of having been diagnosed. Diabetes can damage the blood vessels and nerves that control erection. Therefore, even if one has normal amounts of male hormones and has the desire to have sex, he may still not be able to achieve a firm erection.

This report deals with the clinical manifestations (eg; resting tachycardia, orthostasis, exercise intolerance, intra operative cardiovascular liability, silent myocardial infarction ( MI ) and increased risk of mortality ) in the presence of CAN.

#### HRV and the ANSscope

A series of tests of heart rate variability or R-R interval, expiration-inspiration ratios, heart rate and blood pressure variability in response to a series of manoeuvres comprising inspiration and expiration, deep breathing, Valsava's manoeuvres, and supine or sitting versus standing were conducted. The RR interval variations present during resting conditions represent beat-by-beat variations in cardiac autonomic inputs. This RR Interval variation is counted with the help of ANSscope during ANSitest.

The following articles and news items clearly show the extent to which ADA (American Diabetes Association) and the AHA (American Heart Association) have acknowledged this.

1. The ADA (together with the American Heart Association) recognizes that people with diabetes are at greatest risk of cardiovascular disease.

[http://diabetes.biosino.org/file\\_admin/news/Primary%20prevention%20of%20cardiovascular%20diseases%20in%20people%20with%20diabetes%20mellitus.pdf](http://diabetes.biosino.org/file_admin/news/Primary%20prevention%20of%20cardiovascular%20diseases%20in%20people%20with%20diabetes%20mellitus.pdf)

2. We have the ADA recommendation in its standards of care to measure HRV as soon as diabetes is detected in Type 2 and 5 years after detection in Type 1.

[http://care.diabetesjournals.org/content/35/Supplement\\_1/S11.full.pdf+html](http://care.diabetesjournals.org/content/35/Supplement_1/S11.full.pdf+html)  
The standards of care document are updated and released every year in January by the ADA.

3. The ANSscope (through the measurement of autonomic dysfunction) can immediately provide a risk assessment of cardiovascular disease. Ongoing measurement at regular intervals will provide an indication of whether the risk is decreasing, stable or increasing due to any interventions that are taking place. The ANSscope has the exclusivity of being the ONLY product that can provide this information.

### Minimizing Risk of cardiovascular disease

Risk of cardiovascular disease can arise as a result of a combination of several problems - diabetes, sleep apnea, forms of chronic pain like Fibromyalgia, CRPS (complex regional pain syndrome), RA (rheumatoid arthritis) and IRB (irritable bowel syndrome), to quote just a few. The ANS (Autonomic Nervous System) is so fundamental to the body that if it is in good shape, the internals of the body are in good shape.

Another reason as to why the ANS testing should be made a part of a medical checkup is because it can reveal whether ANS is working or not. If it is not working, the diagnosis of the disease that led to ANS dysfunction needs to be made first before the ANS dysfunction can be attributed to anything else.

A reversal of the ANS dysfunction does NOT cure the underlying disease. For example, diabetes is not cured. Nonetheless, the risk of cardiovascular disease is minimized so that the diabetic will not succumb to a silent heart attack. This is true of every disease.

### A 'measured' approach

Through "Measure" we would like to ensure that each article (especially the case studies) more prominence is given to treatment rather than detection and monitoring. This is contributed by doctors who avail of this. The case study in this issue by Dr. N. Prakash focuses specifically on improving autonomic dysfunction on a diabetic case with erectile dysfunction.

We hope that this persistent and unrelenting focus on treatment will play a role in combating and minimizing the often fatal effects of cardiovascular

associated with dysfunction of the cardiovascular autonomic nervous system. Quantitative analysis of Diabetic Autonomic Neuropathy by using USFDA approved ANSscope helps in diagnosis and assess prognosis.

### Case Report

The case report involves a 67 year old patient who was presented to the centre. The patient has been a diabetic (T2DM) since 21 years, HTN with Dyslipidemia since 8 years, C/O ED since 4 years.

### Case History

On examination, the following recordings were made:

FBS: 220 mg%, HbA1C: P9.3%, Lipids - Total Cholesterol: 230mg%, Triglycerides: 330mg%, HDL Cholesterol: 31mg%, Urea: 45mg%, Creatinine: 1.4mg%, VPT 24-32 Volts, DAN: 79% (Most Advanced).

### Patient Complaint

Burning feet, Nausea, Vomiting sensation, fullness in the stomach, chronic, constipation, occasional diarrhea, giddiness and imbalance after getting up from the bed or chair.

### Diagnosis

Based on the symptoms revealed by the patient, it was observed that the patient exhibited severe disability. Autonomic neuropathy was suspected as

the patient had been a diabetic for 21 years. Also the patient would be suffering from uncontrolled T2DM with HTN with Dyslipidemia with Diabetic Autonomic Neuropathy. A dysautonomia test was performed using ANSscope and the patient was found to be in the most advanced stage (79%).

### Treatment - Focus on Blood Glucose and Dyslipidemia with Diabetic Autonomic Neuropathy along with hypertension.

- Antioxidants
  - Methycobalamine 1500 micro grams
  - Benfatiamine 100 mg
  - Alpha lipoic acid 600 mg
- ACE inhibitor
- Insulin
- Statins
- Diet
- Exercise

### Follow-up: 2012

The patient was placed under a prolonged programme of good diabetes control - satisfactory results soon followed. By January, 2012, the initial reversal stage of Diabetic Autonomic Neuropathy with Dyslipidemia and other parameters could be observed.

FBS: 85mg%, HbA1C: P6.7, Lipids - Total Cholesterol: 138mg, Triglycerides: 145mg, HDL Cholesterol: 47mg, Urea: 38mg, Creatinine: 1mg, VPT - 20-24 Volts DAN: 45% (Late).

In January 2012, after 2 ½ years, a repeat assessment of autonomic dysfunction using ANSscope and vigorous treatment was done, and the patient showed remarkable improvement. The DAN percentage had reduced to 45%. Also Erectile Dysfunction(ED) had improved, and giddiness had drastically reduced. Erection was sufficient enough to have a normal sexual life only with 5mg sildenafil. Bowel movements had become normal. Giddiness and imbalance on getting up had drastically improved.

DATE	FBS (mg)	Urea (mg)
2009	220	45
2012	85	38

### CONCLUSIONS

From this it can be noticed that the detection of autonomic dysfunction with ANSscope followed by diabetic control together with these drugs (methyl cobalamin, Benfatiamine, Alpha lipoic acid) aid in managing DAN easily and effectively. ED is a common complication of diabetes that affects patients' quality of life. Screening for autonomic neuropathy five years after onset of diabetes and yearly follow-up is mandatory.

I found ANSscope as an effective tool to screen and observe the reversion of autonomic dysfunction among diabetic patients in both pre-symptomatic and post-symptomatic stages. It may also be used as a research tool to validate the effectiveness of drugs to treat autonomic dysfunction. While the etiology of this complication may be multi-factorial in nature, it is clear that it usually has a strong organic component. As men with diabetes value their erectile function highly, it is important that providers encourage them to maintain good glycemic, blood pressure, and lipid control to minimize their risk of developing this complication. Providers, therefore, should specifically inquire about erectile function when treating their diabetic male patients and offer the required treatment.