

**UNIVERSITY OF CALGARY**

**CONSENT TO PARTICIPATE IN RESEARCH**

**TITLE**: **Cardiac structure and function in postural orthostatic tachycardia syndrome: A cardiac magnetic resonance study.**

**SPONSOR:** University of Calgary

**FUNDER**: Dysautonomia International

**INVESTIGATORS**: Dr. Satish R. Raj (Principal Investigator),

Dr. Robert S. Sheldon (Co-Investigator),

Dr. James White (Co-Investigator)

# INTRODUCTION

Dr. Satish R. Raj, and associates from the Cardiac Sciences at the University of Calgary, and Stephenson Cardiac Imaging Centre at the Foothills Medical Centre are conducting a research study.

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information. You will receive a copy of this form for your records.

You were identified as a possible participant in this study because you have been diagnosed with Postural Orthostatic Tachycardia Syndrome (POTS) or you are a healthy individual. Your participation in this research study is voluntary.

# ****WHY IS THIS STUDY BEING DONE?****

The purpose of this research study is to compare and better understand the structural heart differences and the blood flow between POTS patients and healthy individuals.

# HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

Up to 60 people will take part in this study. 50 POTS patients, and 10 healthy controls.

# WHAT WILL HAPPEN IF I TAKE PART IN THIS STUDY?

If you volunteer to participate in this study, the researcher will ask you to do the following:

***Day 1. Autonomic Research Lab***

For these tests, we will do some or all the following:

* + place sticky patches on your chest to measure your heart’s electrical activity.
  + measure blood pressure both with a cuff around one arm and with a cuff around a finger.
  + Insert two small plastic prongs into the nostrils of your nose.
  + place a small tube in a vein in your arm to draw blood.
  + ask you to breathe deeply for two minutes (for sinus arrhythmia assessments).
  + ask you to take deep breaths rapidly for 30 seconds (for hyperventilation assessments)
  + blow against pressure for 15 seconds (for Valsalva Maneuvers).
  + squeeze a handgrip for up to 3 minutes (for handgrip test).
  + Placing a tonometer probe on your carotid and femoral artery (for Pulse Wave Velocity)
  + Placing a probe with gel on your temples (for Transcranial Doppler)
  + Strap you onto a tilt table, and then tilt you up on a tilt table for 10 minutes while recording your heart rate and blood pressure.
  + Lower body negative pressure – placing the lower body in an enclosed compartment and depressurizing the closed system.

Some of these tests might be repeated multiple times. At the end of the tilt table testing, if you feel dizzy, we can give you maximum of 1 liter of saline (salt water) for up to 60 minutes through the tube in your vein, if you wish.

***Day 2. Stephenson Cardiac Imaging Centre***

At the MRI center the following procedures will be done:

* Baseline scan of your heart and Lower body negative pressure stress scan (up to 45 minutes) – which will involve placing the lower body in an enclosed compartment and depressurizing the closed system.
* Saline infusion (up to 60 minutes) – You will be given salt water through the IV
* MRI scan post saline infusion (up to 45 minutes)- You will have another scan to study the changes after the saline infusion.

***Day 3. Stephenson Cardiac Imaging Centre***

The third study day will also be at the MRI center and the following procedures will be done:

* Baseline scan of your heart (around 30 minutes), during this scan we will ask you to stay still
* Adenosine infusion (around 60 minutes), during this time we will give you a drug called adenosine. This will make the coronary arteries open – similar to what happens when you exercise. A small amount of MRI dye (gadolinium) is injected into a vein while you are resting and again after you receive the medication. An MRI scanner takes pictures of the gadolinium dye as it passes through your heart muscle

# The order of the studyay change.

# HOW LONG WILL I BE IN THIS STUDY?

Participation in this study will require in person 3 study visits. (not necessarily consecutive days). Two days will take place at the Stephenson Cardiac Imaging Centre at the Foothills Medical Centre and/or at the South Health Campus One day will take place at the Autonomic Research Lab in the Teaching Research and Wellness Building (TRW). You will also be asked to fill out an online questionnaire which may take up to 30- 40 minutes of your time.

**MRI VISIT**

**Magnetic Resonance Imaging (MRI)**: MRI is a test that makes pictures of organs and structures within the body without X-rays or radiation. In this study, MRI will be used to evaluate the heart. MRI uses a powerful magnet to take pictures of your heart. Because the MRI machine exposes the body to a strong magnetic force, you will have to follow certain safety precautions to make sure that you do not have any metal objects in or on your body.

Before you have your MRI scan, you will be asked to complete an MRI safety screening form to identify whether your body contains any metallic medical devices or equipment such as pacemakers, metal prostheses, implants of certain types of surgical clips. If you have these, you will not have the MRI scan.

We will ask you to lie still on the MRI table while we perform the test. For several parts of the study, we will ask you to hold your breath for about 15 seconds at a time.

During the study, we will give you a small amount (about 2 tablespoons) of dye (gadolinium-DTPA) through the catheter in your arm vein. This is the standard dye used during MRI. The dye will allow certain important structures in your heart to show up better and will not interact with any of your medications.

While having the MRI, you will be checked from time to time for chest discomfort, shortness of breath, heart rate, blood pressure and oxygen levels. In addition, trained staff are always present throughout the MRI study.

# ARE THERE ANY POTENTIAL RISKS OR DISCOMFORTS THAT I CAN EXPECT FROM THIS STUDY?

***Blood Pressure Cuff*:** You may find it uncomfortable to have an inflated cuff placed around the finger and the arm for an extended period.

***Electrodes*:** Sticky patches will be placed on your chest and limbs to record electrical activity from your heart and may be uncomfortable or occasionally cause a rash.

***Tilt-table test:*** The table takes about 10 to 15 seconds to put you in standing position. You will be secured on the table. There might be light-headedness, tremor, headache, nausea or fainting during the tilt table test. These symptoms usually resolve rapidly upon lowering of the table.

***Lower body negative pressure:*** There might be a light-headedness or risk of fainting associated with this equipment.

***Hyperventilation or blowing*** may cause you to briefly feel lightheaded

***Handgrip***: Squeezing the handgrip tool may be uncomfortable

***Transcranial Doppler:*** Wearing the headband may be uncomfortable

***Blood Sampling***: There are minor risks and discomforts associated with blood sampling. We will insert a plastic catheter into the vein or use a needle to draw blood samples. This may cause a brief period of pain and possibly a small bruise at the site. Occasionally, a person feels faint when their blood is drawn. There is a small risk of bleeding after removal of the catheter and possibly a bruise at the site, which can be prevented by tight compression on the site. Rarely, an infection develops which can be treated.

You will be able to indicate if you would like to have saltwater given to you through a catheter by checking this box.

***Nasal Prongs:*** Wearing the nasal prongs may cause discomfort.

***MRI scans:*** loud noises from the machine therefore we ask you to wear ear plugs and headphones, you may develop a headache or nausea due to the magnetic field, you may also experience claustrophobia and anxiety due to the limited space in the bore and possible reactions to metals due to magnets.

***Adenosine:*** flushing (sudden warmth, redness, or tingly feeling); chest pressure, shortness of breath; nausea; headache, dizziness; discomfort in your neck or jaw.

***Gadolinium:*** the intravenous contrast material is used routinely in for MRI procedures. Side effects include headache (5%), localized coldness at the injection site (2.8%), nausea (2.5%), and dizziness (less than 2%). Additional adverse reactions seen in less than 1% of patients include pain at the injection site, warmth, substernal (below the breastbone) pain, vomiting, back pain, tiredness and shivering. Exaggerated allergic reactions such as shortness of breath have occurred but are extremely rare. Even though the chances of occurrence of Gadolinium allergy are very small (1 in 1000), there have some reports that patients develop a mild allergic reaction after the MRI scan. They usually cease within an hour. In some rare cases, this leads to more serious allergic reactions such as anaphylaxis, but they are easily treatable using the standard allergy drug treatment.   The effects of leaking of the contrast agent include swelling, discomfort and pain at the injection site, but serious local reactions are not anticipated.

***COVID-19***: This study involves in-person interactions and will require increased time within a health care facility and increased contact with other people. You will be asked to show a proof of vaccination as per the University of Calgary policy.

Authorized representatives from the University of Calgary and the Conjoint Health Research Ethics Board may look at your identifiable medical/clinical study records held at the Autonomic Research Lab for quality assurance purposes

# ARE THERE ANY POTENTIAL BENEFITS IF I PARTICIPATE?

If you agree to be in this study, there may or may not be a direct benefit to you. The results of this study will help us better understand the structural heart differences and the blood flow between POTS patients and healthy individuals.

# WHAT OTHER CHOICES DO I HAVE IF I CHOOSE NOT TO PARTICIPATE?

You may decide not to take part in this study. You may withdraw from the study and cancel this consent at any time before it is completed without any impact on your current and future health care. If you decide to withdraw, you should discuss this with the investigator whose contact information is provided on the bottom of this form

# CAN I STOP BEING IN THE STUDY?

Yes. You can decide to stop at any time. Tell the researchers if you are thinking about stopping or decide to stop.

# WHAT IF RESEARCHERS DISCOVER SOMETHING ABOUT ME?

During the study, the researchers could learn something about you that they didn’t expect. For example, the researchers may find out that you have another medical condition. The researchers will consult with medical experts as needed to evaluate the findings and will then share these results with you. You will be helped with arranging appropriate follow up and care.

I consent for the researchers to share findings with me:

❑ YES

❑ NO

Your images will be read by a Stephenson CMR physician to ensure incidental findings are recorded. Would you like to be informed of these findings?

❑ YES

❑ NO

It is standard practice to inform your family physician of these findings and any further suggested testing. If you agree, please enter the name of your physician.

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# WITHDRAWAL OF STUDY DATA

If you decide to stop being in the study, or are removed from the study, or the study is stopped, the data collected about you up to that point will remain part of the study because the withdrawal of data could bias results. Your data will be kept for 5 years at the University of Calgary.

# WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY FOR ANYTHING?

You will be provided with a $100.00 pre-paid visa card after completion of the entire study days and filling out the online questionnaire. We will also cover parking costs on each study day at the University of Calgary - Foothills Hospital Campus in the TRW Parking Lot or at the South Health Campus. If you are traveling from out of town, we have discounted rates at a hotel close to the Foothills Hospital Campus, but you would be responsible for the hotel costs.

# WILL INFORMATION ABOUT ME AND MY PARTICIPATION BE KEPT CONFIDENTIAL?

The researchers will do their best to make sure that your private information is kept confidential, unless required by law. Information about you will be handled as confidentially as possible, but there is always the potential for an unintended breach of privacy. The research team will handle data according to the Data Management Plan as outlined below:

* All identifiable information about you will be replaced with a code. A master list linking the code and your identifiable information will be kept separate from the research data.
* All research data and records will be maintained in a secure location at the University of Calgary. Only authorized individuals will have access to it.
* We hope to publish the results of this study as a scientific paper to help other doctors treat their patients; however, your privacy will be protected, and you will never be identified by name or by a description of you.

# HOW LONG WILL INFORMATION FROM THE STUDY BE KEPT?

The researchers intend to keep the research data and records for at least **5** years. Any future use of this research data is required to undergo review by a Research Ethics Board.

**WHAT OTHER THINGS SHOULD I CONSIDER BEFORE PARTICIPATION?**

**Use of My Specimens:**

Any specimens (e.g., tissue, blood, urine) obtained for the purposes of this study will become the property of the University of Calgary. Once you provide the specimens you will not have access to them. The University may share your specimens in the future with other researchers or outside institutions. Information that identifies you will not be shared with anyone outside of University of Calgary. The specimens will be used for research and such use may result in inventions or discoveries that could become the basis for new products or diagnostic or therapeutic agents. In some instances, these inventions and discoveries may be of potential commercial value and may be patented and licensed by the University. You will not receive any money or other benefits derived from any commercial or other products that may be developed from use of the specimens.

We will store your blood samples for potential future analysis of substances relevant in heart rate and blood pressure regulation. We store them in -80C freezers at the University of Calgary. The samples themselves are coded with study numbers and no names.

**RESEARCHER CONFLICTS OF INTERESTS**

Dr. Raj is on the Medical Advisory Board of Dysautonomia International – this is an unpaid position.

# USE OF DATA FOR FUTURE RESEARCH

My research data and/or specimens may be kept for use in future research to learn about, prevent or treat other health-related problems.

❑ YES

❑ NO

Additional blood may be taken for this research, as described in the WHAT OTHER THINGS SHOULD I CONSIDER BEFORE PARTICIPATION section above.

❑ YES

❑ NO

# CONTACT FOR FUTURE RESEARCH

University of Calgary researchers may contact me in the future to ask me to take part in other research studies.

❑ YES

❑ NO

**IF I SUFFER A RESEARCH-RELATED INJURY, WILL I BE COMPENSATED?**

It is important that you tell the researchers if you believe that you have been injured because of taking part in this study.

In the event that you suffer injury as a result of participating in this research, no compensation will be provided to you by the University of Calgary, Alberta Health Services or the Researchers. However, you still have all your legal rights. Nothing said in this consent form alters your right to seek damages.

# WHOM MAY I CONTACT IF I HAVE QUESTIONS ABOUT THIS STUDY?

# The Research Team:

You may contact Dr. Satish R Raj (403) 210-6152 with any questions or concerns about the research or your participation in this study.

# Conjoint Health Research Ethics Board (CHREB):

If you have any questions concerning your rights as a possible participant in this research, please contact the Chair, Conjoint Health Research Ethics Board, University of Calgary at 403-220-7990.

# HOW CAN I FIND OUT ABOUT THE STUDY RESULTS?

Individual study results will be made available to the participants on request

# WHAT ARE MY RIGHTS IF I TAKE PART IN THIS STUDY?

Taking part in this study is your choice. You can choose whether or not you want to participate. Whatever decision you make, there will be no penalty to you.

* You have a right to have all of your questions answered before deciding whether to take part.
* Your decision will not affect the standard medical care you receive
* If you decide to take part, you may leave the study at any time

# HOW DO I INDICATE MY AGREEMENT TO PARTICIPATE?

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to take part in the study. In no way does this waive your legal rights nor release the investigators or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time without jeopardizing your health care. If you have further questions concerning matters related to this research, please contact: **Satish Raj, MD (403) 210-6152**

# SIGNATURE OF STUDY PARTICIPANT

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Name of Participant

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Signature of Participant Date

# SIGNATURE OF PERSON OBTAINING CONSENT

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Name of Person Obtaining Consent Contact Number

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Signature of Person Obtaining Consent Date

The University of Calgary Conjoint Health Research Ethics Board has approved this research study.

A signed copy of this consent form has been given to you to keep for your records and reference.