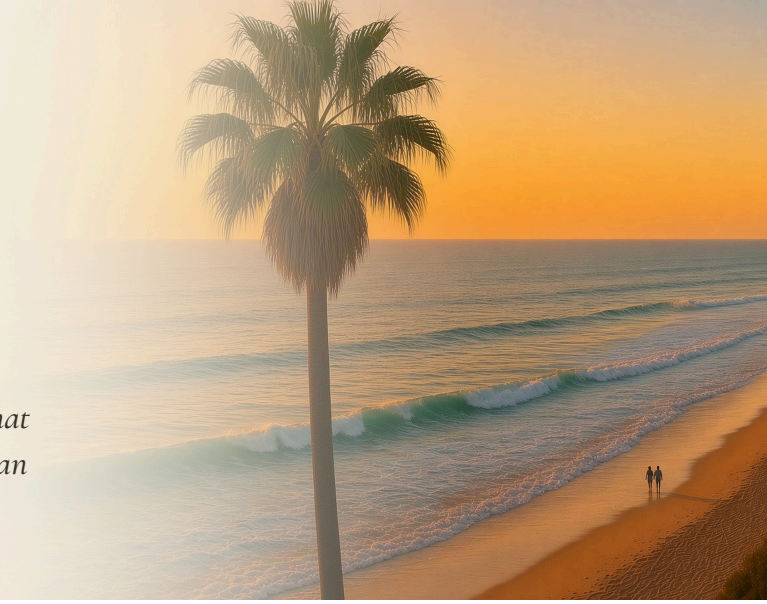
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Cardiac MRI

A strong magnet and radio waves, with no radiation, show what your heart muscle is made of. How to prepare and what the scan is like.

45–60 min
in the scanner, give or take, and 90 minutes to 2 hours for the visit

No radiation
a strong magnet and radio waves make the pictures

10–20 sec
for each breath-hold, with 10 to 20 of them during the scan

WHAT IT SHOWS

Where the scar sits names the disease



No scar
Healthy muscle clears the contrast, stays dark

Old heart attack
Inner-layer scar in one artery's territory

Myocarditis
Patchy outer-wall scar

Sarcoidosis
Patchy mid-wall scar, often in the upper septum

Amyloidosis
Diffuse brightness that ignores artery boundaries

HCM
Thick upper septum with mid-wall scar

An echo shows the heart pumping and the valves working. Cardiac MRI does that and adds what the muscle is made of. About 10 to 15 minutes after the gadolinium contrast goes in, healthy muscle has cleared it and stays dark, while scarred muscle holds onto it and lights up bright. The pattern is what names the disease. HCM is hypertrophic cardiomyopathy, a genetic thickening of the muscle. The six pictures above are drawings of each pattern, not real scans.

ON SCAN DAY

What the scan is like

1 Get settled
An IV goes in, which feels like a blood draw. You lie on your back in a tunnel open at both ends, with ECG stickers, a chest coil, earplugs and a squeeze ball to press if you need to stop.

2 Hold your breath
Each hold lasts 10 to 20 seconds. Take a moderate breath, since a half-full chest is far easier to hold, and stay still. If you can't make it, hold what you can and breathe.

3 Contrast, then home
About 20 to 30 minutes in, gadolinium goes through your IV. Most people feel nothing, and a few notice a cool arm or a brief metallic taste. Afterward you can eat, drive and go back to normal activity.

Why it was ordered

Your echo raised a question it couldn't fully answer. If the scan names a disease with its own treatment, such as amyloidosis, sarcoidosis or HCM, it can change the whole course of care for someone labeled for years with a cardiomyopathy of unclear cause.

PREPARING FOR YOUR SCAN

Before you go, and after

THE SAFETY FORM

answer it completely

Metal and implants	It asks about pacemakers, defibrillators, joint replacements, surgical clips, cochlear implants, insulin pumps and any metal in your eye from metalwork or welding. It also asks about tattoos, pregnancy, allergies and prior contrast reactions. If you're unsure whether an implant is MRI-safe, call your surgeon's office or your cardiologist before the scan.
Pacemaker or ICD	Most implanted in the last 10 to 15 years are MRI-conditional, and older ones may not be. Confirm with your electrophysiologist. The device is reprogrammed before the scan, a device technician monitors throughout, and it's reprogrammed back afterward. That adds maybe 30 to 60 minutes to your visit.
Kidneys and contrast	Modern macrocyclic gadolinium agents carry very low risk with normal or mildly reduced kidney function, and the contrast clears through your kidneys over a day or two. If your estimated GFR is below 30 or you're on dialysis, the decision is individualized, and the study is sometimes done without contrast.
Claustrophobia	Mention it when you schedule. A wide-bore scanner has a 70 cm opening, wider than the traditional 60 cm, and handles most cases. Oral lorazepam before the appointment helps many people, though you'll need a ride home if you take it.

FOOD, DRINK AND MEDICINES

for most scans, eat, drink and take medicines as usual

Stress perfusion study	No caffeine for 12 to 24 hours beforehand, meaning no coffee, tea, chocolate, energy drinks or caffeinated medications. Caffeine blocks the vasodilator drug used to mimic exercise.
If you're getting contrast	Some centers ask you to skip food for 2 to 4 hours, to reduce the small risk of nausea.
Metformin	You can keep taking it. MRI contrast is gadolinium, and the rule about holding metformin applies to the iodine contrast used in CT scans and heart catheterization.

WHAT TO WEAR, BRING AND EXPECT

Wear	Clothes with no metal, meaning no zippers, metal buttons, underwire bras or metallic thread, though most centers hand you a gown anyway. Leave jewelry at home and bring cases for glasses and hearing aids.
Bring	Your insurance card, the order, a medication list and any prior cardiac imaging on disc for comparison.
Driving	You can drive yourself both ways, since no sedation is used for a routine cardiac MRI, unless you took lorazepam.
Results	The report is usually final within 24 to 72 hours. Dr. Rasch calls his patients with results within a week, sooner if anything urgent turns up. If you haven't heard within 7 to 10 days, call the office.

METAL TO ALWAYS CHECK

Older aneurysm clips in the brain, older cochlear implants, some neurostimulators, metal shrapnel or bullet fragments near critical structures, and some insulin pumps. Most other metal is fine, including modern joint replacements, coronary stents and dental work.

READ THE FULL ARTICLE

damianrasch.com/
cardiac-mri-guide

For education only, and not a substitute for advice from your own physician. Sources include the 2020 SCMR standardized cardiac MRI protocols, the 2010 ACCF/ACR/AHA/NASCI/SCMR expert consensus document on cardiovascular magnetic resonance, the 2018 Lake Louise criteria and the CE-MARC trial.

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