Silent Coronary Ischemia as Detected by FFR_{CT} is Common in Carotid Stenosis Patients

Coronary Revascularization in Such Patients Decreases Mortality

When Should It Be Done – Before or After Carotid Treatment ?

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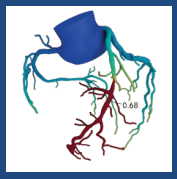
Disclosure

I have a financial interest in HeartFlow, Inc

Silent Coronary Ischemia

- **Silent (asymptomatic) coronary ischemia** is a marker for high risk for myocardial infarction or sudden cardiac death
- Coronary ischemia can be diagnosed non-invasively using coronary CT-derived fractional flow reserve (FFR_{CT})
- FFR_{CT} testing reveals silent coronary ischemia in 50% of patients with no cardiac history or symptoms undergoing carotid endarterectomy[1]
- 2021 AHA/ACC guidelines[2] recommend coronary CTA + FFR_{CT} to diagnose coronary ischemia and guide selection of patients for coronary revascularization

FFR_{CT} : coronary CT-derived fractional flow reserve



Color coded 3-D map of FFR values
FFR_{CT} ≤0.80 = coronary ischemia

[1]Krievins, JVS 2021; [2]Gulati, JACC 2021

Can revascularization of silent ischemia improve outcome?

From the Society for Vascular Surgery J Vasc Surg 2022;76:750

Coronary revascularization of patients with silent coronary ischemia may reduce the risk of myocardial infarction and cardiovascular death after carotid endarterectomy

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Single-center, IRB-approved, open label study
200 pts with no cardiac Sx undergoing elective CEA

Preop CTA+FFR_{CT}
Elective post-op coronary revasc, +BMT
(n-100)

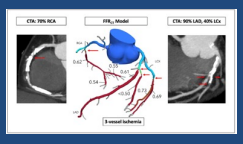
vs

Matched Controls
Standard care, BMT
No coronary revasc
(n-100)

Endpoints at 3 years
- **Primary: Cardiac death or MI**
- **Secondary: Cardiac death; MI**

Pre-op cardiac evaluation

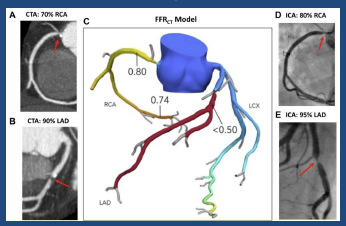
- **CTA + FFR_{CT} group**
  - **57% Lesion-specific coronary ischemia** (FFR_{CT}≤0.80)
  - **44%** Severe ischemia (FFR_{CT}≤0.75)
  - **7%** Left main ischemia
  - **28%** Multivessel ischemia



- **Control group -** Status of coronary ischemia unknown

Post-op FFR_{CT}-guided coronary revascularization in 33%

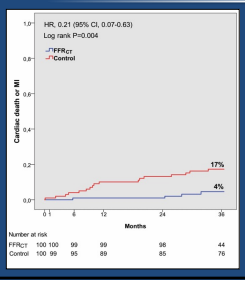
1-3 months post CEA elective coronary revasc in patients with left main, proximal LAD, multivessel and severe ischemia
27 PCI, 6 CABG



Control group: BMT alone, no coronary revasc

- 70 y.o. female diabetic with Hx stroke; no Hx or Sx of CAD

Primary endpoint – Cardiac Death or MI



4X reduction in cardiac death / MI in FFR_{CT} at 3-years

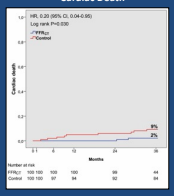
17% Control vs 4% FFR_{CT} p=0.004
Hazard ratio 0.21 (95% CI 0.07-0.63)

This was associated with elective coronary revascularization in 33% of patients

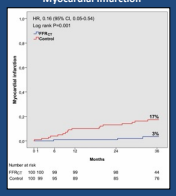
Krievins, et al, J Vasc Surg 2022;76:750

Secondary Endpoints

Cardiac Death



Myocardial Infarction



4x reduction in cardiac death
Control 9% vs FFR$_{CT}$ 2%, p=0.03
HR 0.20 (95% CI 0.04-0.95)

5x reduction in MI
Control 17% vs FFR$_{CT}$ 3%, p=0.001
HR 0.16 (95% CI 0.05-0.54)

All-cause death at 3 years

- **16% in Control vs 7% in FFR$_{CT}$,ns**

5-year follow up shows a significant reduction in all-cause death

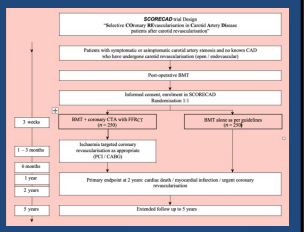
Limitations:
Single center, observational study, potential for selection bias;

Randomized trials are needed

Krievins, et al, J Vasc Surg 2022;76:750

Randomized SCORECAD trial

- Selective **Co**ronary **Re**vascularization in **C**arotid **A**rtery **D**isease patients after carotid revascularization (NCT 06546761)
- **PI** –Dainis Krievins, Univ of Latvia
- **Randomization after CEA to**
  - **CTA and FFR$_{CT}$-guided coronary revasc vs**
  - **Usual care – BMT alone, no coronary revasc**
- **Primary endpoint at 2 years**
  - Cardiac death, myocardial infarction or urgent (unplanned) coronary revascularization
- **Currently enrolling -** open for additional sites
  - For information contact <dainis.krievins@stradini.lv>



Krievins, et al. EJVES 2024

When should coronary revascularization be done – before or after carotid treatment ?

- For symptomatic carotid stenosis – risk of stroke is high
  - After carotid treatment to reduce risk of cardiac death and MI and improve long-term survival
- For asymptomatic carotid stenosis - risk of stroke is low
  - Before carotid treatment to reduce risk of cardiac death and MI and improve long-term survival

Thank you for your attention