MuSCAT Histology

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON23614

Source
NTR

Brief title
MuSCAT Histology

Health condition

Anomalous coronary artery

Sponsors and support

Primary sponsor: LUMC
Source(s) of monetary or material Support: LUMC

Intervention

Outcome measures

Primary outcome

Histological features of the vascular wall of the excised tissue (main parameter: sharing of the media between the aorta and the ACAOS vascular wall).

Secondary outcome

Correlation of the histological features of the shared vessel wall and anatomical features measured on the pre-operative CT-scan.

Study description

Background summary

An anomalous coronary artery from the opposite sinus of Valsalva or opposite coronary artery (ACAOS) is a relatively uncommon congenital heart disease. Most large studies on the prevalence of congenital coronary anomalies are based on reviews or data obtained at coronary angiography (CAG) in which the reported prevalence ranges from about 0.14% to 1.74%. In various respects, the most important group of these anomalies concerns coronary arteries or coronary artery branchesarising from the opposite sinus, that is, the left coronary artery (LCA) arising from the right sinus of Valsalva or the proximal right coronary artery (RCA), or the RCA artery arising from the left sinus of Valsalva or proximal LCA.

A LCA from the opposite sinus of Valsalva, can follow 4 courses: (1) between the aorta and pulmonary artery, the interarterial course; (2) anterior to the pulmonary artery, the anterior course; (3) posterior to the aorta, the posterior course; (4) through the interventricular septum, the intraseptal course (also called subpulmonic course).
The right coronary artery can follow 3 courses: (1) between the aorta and pulmonary artery, the interarterial course; (2) anterior to the pulmonary artery, the anterior course; (3) posterior to the aorta, the posterior course.

An interarterial course of the anomalous coronary artery, in which the left main coronary artery (LMCA), LAD or RCA courses between the aorta and pulmonary artery, is the most malignant variant. This anomaly may be the cause of sudden death, especially during or after strenuous exercise. The risk of SCD is greater for an interarterial LCA than for an interarterial RCA. Compression of the LMCA, LAD or RCA between the aorta and pulmonary artery was previously thought to be the mechanism underlying sudden death. Currently, most investigators assume that an acute angle take-off, which is associated with a slit-like orifice and easily collapsible proximal portion of the vessel, is responsible in most cases. Collapse of the proximal coronary artery in a valve-like manner, for example by stretching of the aortic wall during vigorous exercise and concomitant rise of blood pressure, may cause occlusion and sudden death. This situation is most likely to occur if a relatively long portion of the coronary artery is embedded in the aortic wall (an intramural course). An intramural course is defined as the anomalous coronary artery being embedded in the aortic tunica media, i.e. the ACAOS and aorta share their tunica media.

However, it is not clear whether all interarterial coronary arteries, are also intramural coronary arteries (i.e. share their media wall with the vascular wall of the aorta), and whether the degree of acute angulation predisposes for an intramural course. Besides an intramural course, age also seems to influence the risk of SCD. For as yet not fully clarified reasons older patients are less prone to SCD caused by the ectopic interarterial coronary artery. In patients >35 years old, obstructive atherosclerotic coronary artery disease or other concomitant conditions become a more prevalent cause for SCD than the interarterial course of an anomalous coronary artery. A potential reason for this could be that with increasing tissue fibrosis in older patients, collapse of the proximal coronary artery in a valve-like manner by stretching of the aortic wall is less likely to happen.

When the anomalous artery is embedded in the aortic wall the most frequently used surgical procedure is unroofing. This technique, which may be used for an abnormal RCA or LCA, creates a large neo-orifice in the appropriate sinus by excising the shared vessel wall in the intramural part. After the procedure, the ectopic artery arises in a more normal fashion more perpendicular to the aortic root.

In this study we will investigate the excised tissue during the unroofing procedure to better understand the histological features of an anomalous coronary artery with an suspected intramural course. We will also correlate the histological findings to the pre-operative imaging, the visual findings during the surgery and the age of the patient.

Study objective

An intramural course is defined as the anomalous coronary artery being embedded in the aortic tunica media

Study design

Time point primary outcome: During the unroofing procedure (surgery) the tissue is excised. The tissue is preserved and analyzed under a microscope.
Time point secondary outcome: The anatomical features on CT are measured before the surgery during the diagnostic work-up. The histological features are analyzed after the surgery as described in the time point of the primary outcome.

Intervention

All diagnostics/interventions will be performed in the context of the standard clinical patient care. No additional diagnostics/interventions will be performed for this study.

Contacts

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Eligibility criteria

Inclusion criteria

All patients with an anomalous coronary artery from the opposite sinus (ACAOS) with suspected interarterial course with an indication for surgical ‘unroofing’.

Exclusion criteria

None

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	21-10-2021
Enrollment:	15
Type:	Anticipated

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	21-10-2021
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL9823
Other	METC-LDD : B21.068

Study results