Vascular Studies Unit Protocol: Carotid Artery Ultrasound Scan RRCV	University Hospitals of Leicester NHS NHS Trust VSU Reference Number: 016

Approved By:	**Matt Bown, Head of Vascular Service Jo Walker, Chief Clinical Vascular Scientist**
Date Implemented:	**June 2021**
Version:	**V6**
Supersedes:	**V5 2019**
Author / Originator(s):	**Tim Hartshorne**
Reviewed by:	**VSU Clinical Scientist Working Group, June 2021**
Next Review Date:	**June 2023**

Abbreviations	
TIA	Transient ischemic attacks
CVA	Cerebrovascular Accident
CCA	common carotid artery
ECA	external carotid artery
ICA	internal carotid artery
COPD	obstructive pulmonary disease
PSV	Peak systolic velocity
EDV	End diastolic velocity
CEA	Carotid Endarterectomy
NASCET	North American Symptomatic Carotid Endarterectomy Trial
ECST	European Carotid Surgery Trial

Changes Made	By	Date
Review, removed generic equipment & safety section, now separate doc	JW	April 2016
Page 5: added more detail (shown in bold) to the pre-op recordings, as per audit discussion July '16 VSU meeting. A diagram showing extent and composition of	JW	July 2016

atheroma(including plaque length measurement and distance extending into the ICA from bifurcation), vessel geometry, tortuosity, distal lumen diameter, is drawn into the appropriate scan box of the clerking form (pink) available within the patients' notes.		
Planned review. Updated indications/contraindications list, aligned with SVT protocol	All / JW	Sept 2019

Purpose

The scan is performed to assess the presence of pathology and the haemodynamic status of the common carotid artery (CCA), the internal carotid artery (ICA), external carotid artery (ECA) and vertebral artery.
Common indications

Common indications for the performance of this examination include:

- Transient ischemic attacks (TIA)
- Amaurosis fugax
- Carotid bruit
- Cerebrovascular Accident (CVA)
- Trauma in the area of the carotid arteries (suspected dissections, pseudoaneurysm, AV fistula)
- Pulsatile neck masses
- Evaluation of suspected subclavian steal syndrome
- Pre-operative assessment for high risk patients
- Follow up of know carotid stenosis
- Post intervention follow up (carotid endarterectomy, stent or bypass)

Contraindications and Limitations

Contraindications for extracranial cerebrovascular duplex ultrasound are few; however, some limitations exist and may include the following:

- Patients with short, thick muscular necks
- Patients who have had recent surgery, ultrasound visualisation may be limited due to oedema, haematoma, surgical staples, dressings etc
- Calcified plaque may cause acoustic shadowing limiting Doppler and B-mode image assessment.
- Patients who are unable to lie flat due to pre-existing co-morbidities e.g. chronic
- obstructive pulmonary disease (COPD) and arthritis – although these patients may be able to tolerate being examined seated in a chair or with the head of the bed raised
- Patients who are unable to cooperate due to reduced cognitive functions e.g.
- Alzheimer's or dementia and through involuntary movements
- Examinations undertaken portably at the patient's bedside maybe limited due to
- equipment and room dimensions.

Communication with patients

The patient must be capable of lying still during the scan. It is explained that the test is carried out to look at the blood vessels in the neck, to identify a potential cause of previous TIAs or stroke or as routine screening prior to cardiac surgery. The patient is reassured that the test is painless.
The patient's dignity and privacy should be maintained at all times. During the examination the patient's mental and physical status should be monitored and modifications made to the examination accordingly.

Equipment

Duplex Doppler ultrasound machine with a high, mid-range and a low-range frequency probe.

Test Procedure

The patient is positioned supine with the neck extended and slightly rotated. If the patient is unable to transfer from a wheelchair or is bed-bound, the scan may still be performed and the patient positioning is noted on the report.

Select an appropriate frequency transducer, considering vessel depth and body habitus.
For carotid assessments, bilateral evaluation of the following arteries should be included, as Appropriate, unless otherwise indicated:

- CCA
- ECA
- ICA
- Vertebral Artery
- Subclavian Artery (where required)

Bmode: The extent and composition of atheroma is noted which can be described as smooth or irregular in surface characteristics, homogeneous, heterogeneous, calcified, moderately echoic or anechoic in composition. Changes in diameter or cross-sectional area may be assessed and measured.

Colour Doppler: Filling defects may be observed during colour flow assessment. Colour PRF must be optimised for the flow velocities in each vessel, and areas of aliasing used to highlight flow velocity increases. Areas of plaque ulceration can also be noted using colour, power Doppler or B-Flow (depending on machine options).

Spectral Doppler: A Doppler angle of ≤60 must be used for recordings, aligned with the direction of flow. Record the highest PSV's & EDV's in the CCA and ICA. The ECA waveform can be recorded for vessel identification, but is excluded from calculations. The vertebral artery is located and the Doppler signal is examined. If flow appears significantly damped the origin of the vertebral artery may be examined (where possible) to locate a possible stenosis. Partially or fully reversed flow in the vertebral artery is indicative of a subclavian steal syndrome. If the degree of reverse flow is inconclusive the vessel may be rescanned following one minute of rigorous arm exercises. The ipsilateral subclavian artery should then be investigated to identify an occlusion or stenosis.

Interpretation and grading of disease

The following table of velocities and velocity ratios should be used as a guide to assess degree of narrowing. Appendix one summarises other criteria for consideration.

Tortuous vessels, localised aneurysms or dilated vessels should also be reported. Any unusual findings such as Carotid Body Tumor, False Aneurysms, and Carotid Artery Dissections should be viewed and verified by a second observer and appropriate images recorded where possible.

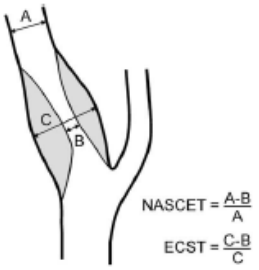
Very high grade stenoses may lead to a reduction in velocities just distal to the narrowing. It is very important to distinguish between 'a normal (disease free) but under-perfused vessel' distal to the narrowing and 'a sub-occlusion' where there is no end point to the disease.

VSU Grading Consensus Table:

(collated from Oates et al 2008, Grant et al 2003, Sidhu & Allen 1997)

% Stenosis (NASCET)	ICA PSV cm/s	ICA EDV cm/c	Ratio ICA PSV / CCA PSV	St Mary's Ratio ICA PSV / CCA EDV*	Plaque est. % dia. Redn.
Normal	<125	<40	<2	<8	0
30-49	110-130	<40	<2	<8	<50
>50**	125-230	<40	2-4	8-10	>50
>60	>130	40-110	3.2-4	11-13	
>70	>230	110-140	>4	14-21	
>80		>140		22-29	
>90	>400		>5	>30	
Near Occln.	High/ low/ String flow				
Occluded	No flow				

**Exclude St.Marys Ratio if any EDV<10cm/s*



****Grading for 50% Stenosis**

The percentage stenosis cut-off for consideration for CEA is now 50% NASCET (for symptomatic disease). The grading for a 50% stenosis is difficult and can be more subjective.

It is recommended to use at least 2 concurring grading velocity values, including PSV and a ratio calculation, as well as (where possible) measuring either a diameter reduction or area reduction.

Parameters for 50% Stenosis Grading						
ICA PSV	ICA/CCA PSV Ratio	ICA PSV /CCA EDV ratio	ICA EDV	B-Mode (+/- colour) % Diameter Reduction (NASCET)	B-Mode (+/- colour) % Diameter Reduction at Bulb (ECST)	B-Mode (+/- colour) % Area Reduction
>125 cm/s	>2	>8	>=40 cm/s	>=50%	>=75%	>=75%

For plaques that do not appear to cause raised velocities through the remaining lumen, despite a large burden of atheroma (in a large carotid bulb for example) then it is vital to take either diameter or area reduction measurements, and quote the ECST stenosis grading alongside the NASCET stenosis grading.

N.B. in the single visit clinic setting limited investigations may be carried out as per instruction from the requesting clinician.

Reporting of Results

The report is a recording and interpretation of observations made during the duplex ultrasound examination; it should be written by the CVS undertaking the examination and viewed as an integral part of the whole examination. The report should include correct patient demographics; date and time of examination; examination type and the name and status of the CVS.

Outpatients & Single Visit Clinic Scans:

A schematic diagram is completed (see attached report sheet).

Pre-Operative Scan:

The pre-op scan will be undertaken by a different vascular scientist than whoever performed the latest diagnostic scan, as per NICE Guidelines.

A diagram showing extent and composition of atheroma (including plaque length measurement and distance extending into the ICA from bifurcation), vessel geometry, tortuosity, distal lumen diameter, is drawn into the appropriate scan box of the clerking form (pink) available within the patients' notes, and this is scanned onto CRIS.

TIA Clinic Scans:

A schematic diagram is completed (see attached report sheet)

The yellow copy is attached in the TIA Clinic notes, and also scanned onto CRIS. The findings are recorded on the TIA Clinic 'Plexias System' located on the intranet.

PACS:

If PACS is available, then appropriate images may be recorded.

Red Flags:

The on-call vascular registrar must be contacted for any outpatient attending VSU with a significant finding (≥50% **and presenting with TIA symptoms**) before the patient is sent home.

Supporting References

Oates c. *et al* (2008) Joint Recommendations for Reporting Carotid Ultrasound Investigations in the United Kingdom, Eur J Vasc Endovasc Surg.

Grant E.G. *et al* (2003) Carotid Artery Stenosis: Grey-scale and Doppler US Diagnosis – Society of Radiologists in Ultrasound Consensus Conference, Radiology. 229:340-346

Sidhu. P. and Allan. P. (1997), Ultrasound Assessment of Internal Carotid Artery Stenosis, Clinical Radiology. 52: 654-658.

Thrush. A. and Hartshorne. T. (1999). Peripheral Vascular Ultrasound: How,Why and When, London, Churchill Livingstone.

Implementing the National Stroke Strategy – An Imaging Guide' May 2008 http://www.bnms.org.uk/other-guidelines/doh-publication/department-of-healthpublications.html

National clinical guidelines for stroke fifth edition prepared by the intercollegiate stroke working party 2016 https://www.rcplondon.ac.uk/guidelines-policy/stroke-guidelines

Society for Vascular Technology GB& I, Vascular Technology Professional Performance Guidelines Extracranial Cerebrovascular Duplex Ultrasound Examination, 2019

Appendix 1

A selection of reporting criteria for grading carotid artery lesions:

Oates, et al (2008)

Percentage stenosis (NASCET)	Internal carotid peak systolic velocity cm/sec	Peak systolic velocity ratio ICA $_{PSV}$/CCA $_{PSV}$	St Mary's ratio[c] ICA_{PSV}/CCA_{EDV}
<50	<125[a]	<2[a]	<8
50–59	>125[a]	2–4[a]	8–10
60–69			11–13
70–79	>230[a]	>4[a]	14–21
80–89			22–29
>90 but less than near occlusion	>400[b]	>5[b]	>30
Near occlusion	High, low – string flow	Variable	Variable
Occlusion	No flow	Not applicable	Not applicable

[a] NACC 17.
[b] Filis et al. 37.
[c] Nicolaides et al. 33.

Grant, et al (2003)

Consensus Panel Gray-Scale and Doppler US Criteria for Diagnosis of ICA Stenosis

	Primary Parameters		Additional Parameters	
Degree of Stenosis (%)	ICA PSV (cm/sec)	Plaque Estimate (%)*	ICA/CCA PSV Ratio	ICA EDV (cm/sec)
Normal	<125	None	<2.0	<40
<50	<125	<50	<2.0	<40
50–69	125–230	≥50	2.0–4.0	40–100
≥70 but less than near occlusion	>230	≥50	>4.0	>100
Near occlusion	High, low, or undetectable	Visible	Variable	Variable
Total occlusion	Undetectable	Visible, no detectable lumen	Not applicable	Not applicable

* Plaque estimate (diameter reduction) with gray-scale and color Doppler US.

Sidhu & Allen (1997)

% stenosis	PSV	EDV	PSV_{ICA}/PSV_{CCA}
0 - 29	<100	<40	<3.2
30 – 49	110 - 130	<40	<3.2
50 – 59	>130	<40	<3.2
60 – 69	>130	40 - 110	3.2 – 4.0
70 – 79	>230	110 - 140	>4.0
80 – 89	>230	>140	>4.0
90 – 99	'String' flow		
100	No flow		

Example Report

VASCULAR STUDIES UNIT

University Hospitals of Leicester NHS
NHS Trust

Level 6, Balmoral Building
Leicester Royal Infirmary
Tel: 0116 258 5440
Fax: 0116 258 6821

CAROTID DUPLEX SCAN REPORT

Surname: _____

Forename: _____

DOB: _____

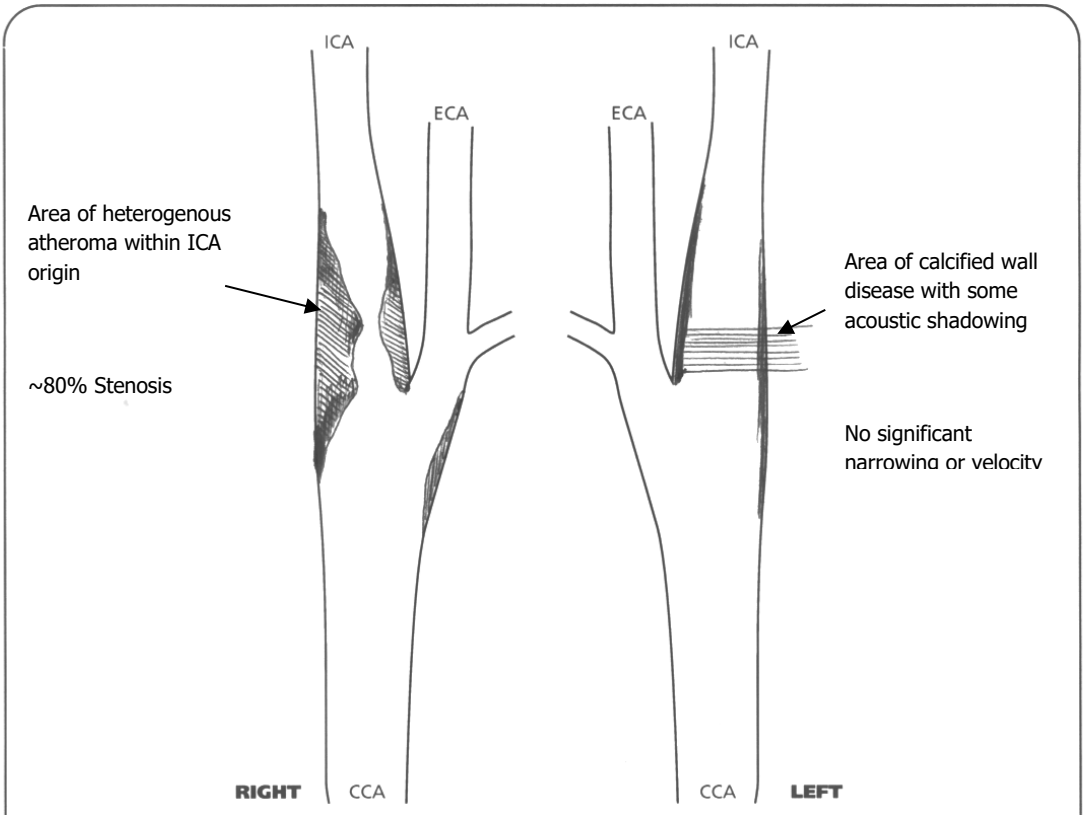
Unit Number: _____

(or use patient label)

CONSULTANT: DEPT:

CLINICAL HISTORY: HOSPITAL:

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	80	380	130	forward
LEFT	0	60	—	forward



COMMENTS:

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PRINT NAME: _____ DATE: _____

Image Quality:

GOOD ○ ☑ ○ POOR

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Level 1
Glenfield Hospital
Tel: 0116 258 5440

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University Hospitals of Leicester
NHS Trust

CAROTID DUPLEX SCAN REPORT

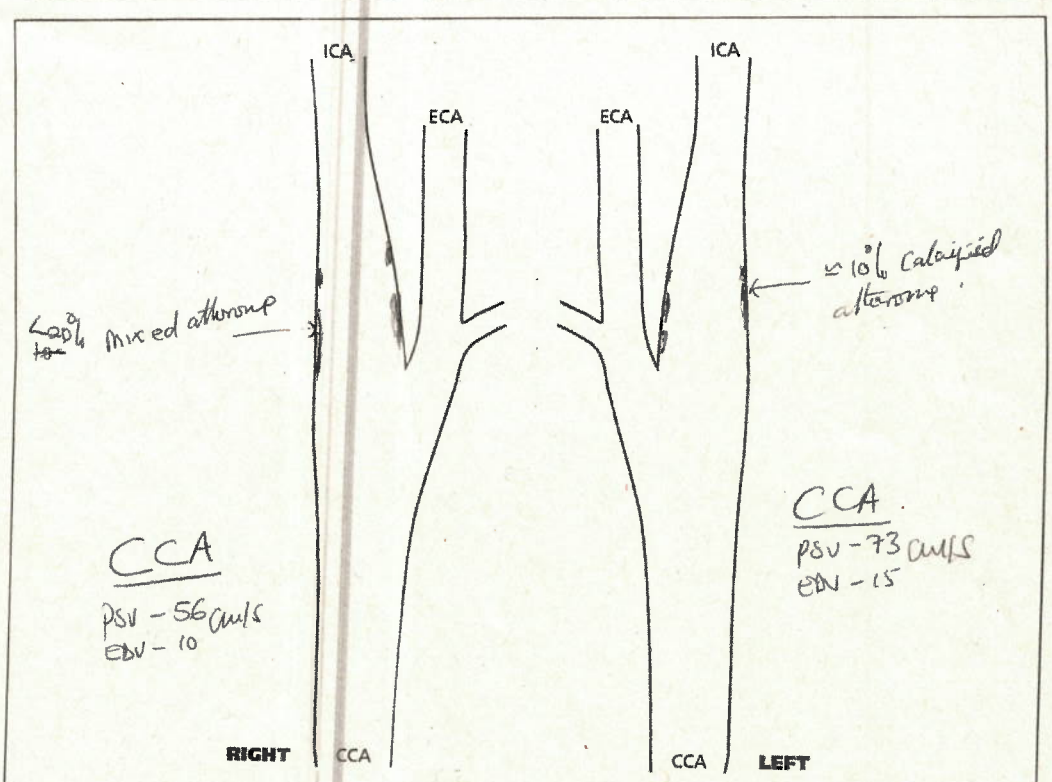
(or use patient label)

CONSULTANT: BANSAL DEPT: R25

CLINICAL HISTORY: HOSPITAL: LRI

admitted with ① facial droop + ② limb weakness.

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<20	50	17	fwd
LEFT	≤ 10	43	17	fwd



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(Walker)5177144KR

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CAROTID DUPLEX SCAN REPORT

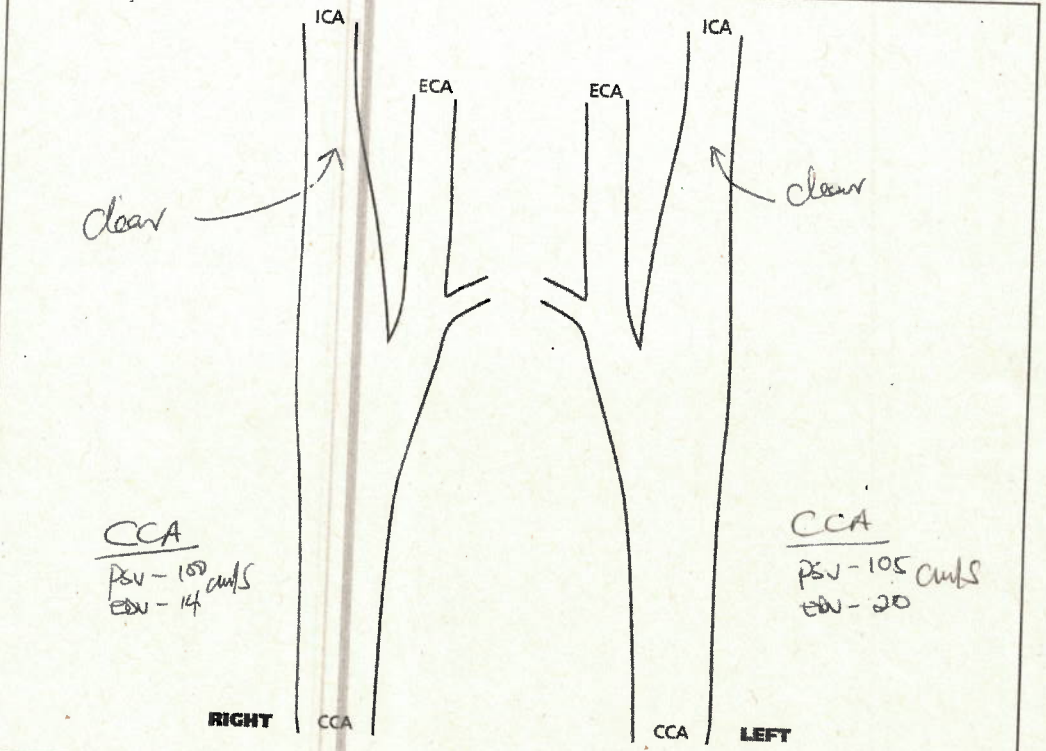
(or use patient label)

CONSULTANT: MACHIN DEPT: R33

CLINICAL HISTORY: HOSPITAL: LRI

a diabetic ex smoker ~~ex~~ ischaemic heart disease

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	60	27	fwd
LEFT	0	62	22	fwd



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SIGNED: CLINICAL VASCULAR SCIENTIST

PRINT NAME: Rosalia Le Kange DATE: 23/08/23

IMAGE QUALITY: GOOD ✓ POOR

(Walker)617111444R

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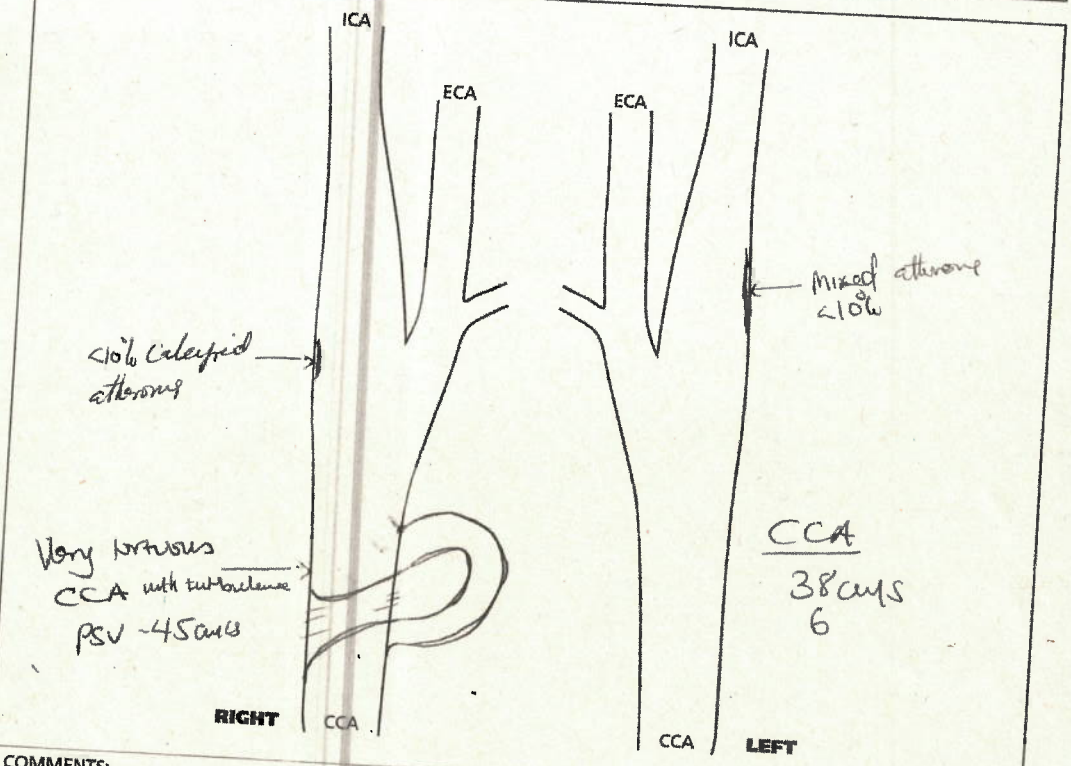
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MACHELL DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

Left arm weakness and facial droop.

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<10	22	7	fwd
LEFT	<10	22	6	fwd



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(Walker)5171144KR

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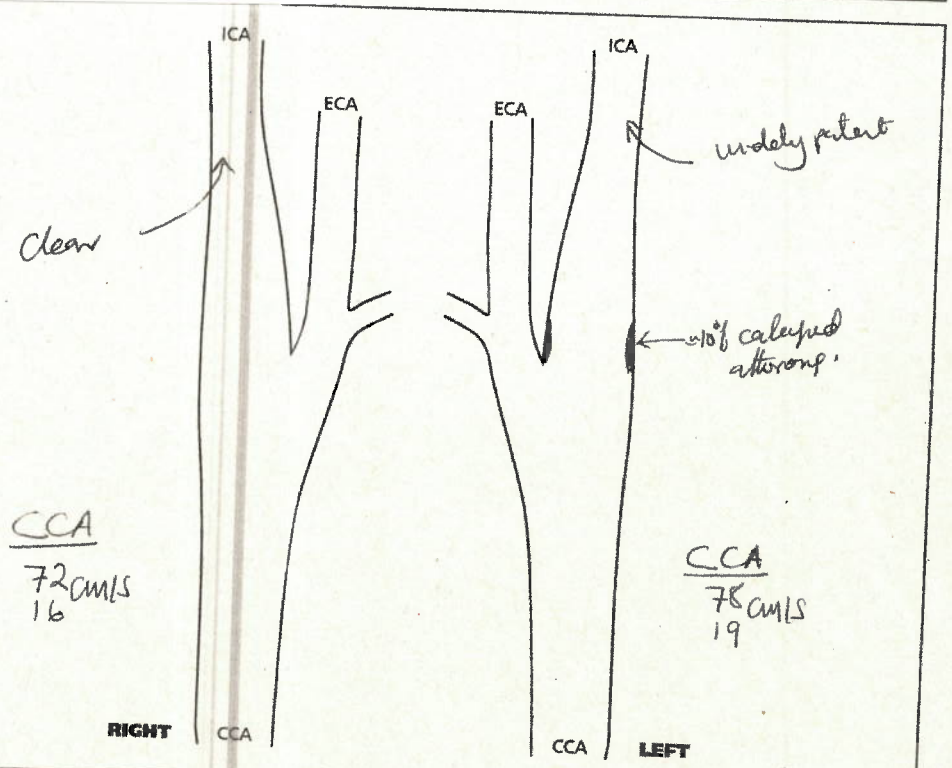
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MACHIN DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

Couldn't open eyes & felt face going weak

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	58	16	Fwd
LEFT	≤10	64	22	Fwd



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PRINT NAME: Ponsonby Lukunga DATE: 23/05/23

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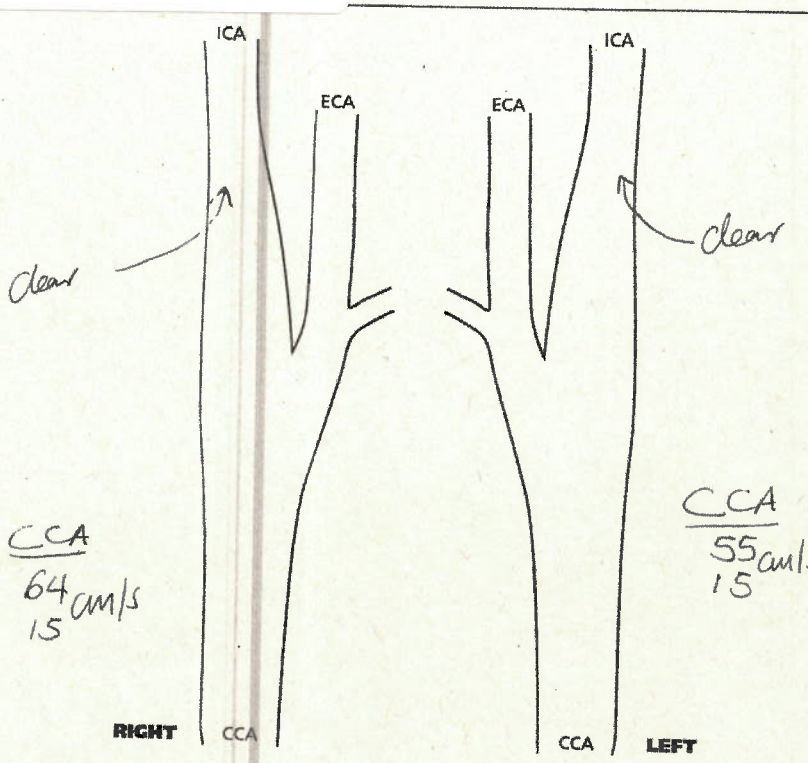
CAROTID DUPLEX SCAN REPORT

CONSULTANT: Macbeth DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

gradual onset of diplopia on right deviation of gaze

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	74	26	fwd
LEFT	0	43	16	fwd



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PRINT NAME: Ponsias Lukinge DATE: 23/05/23.

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

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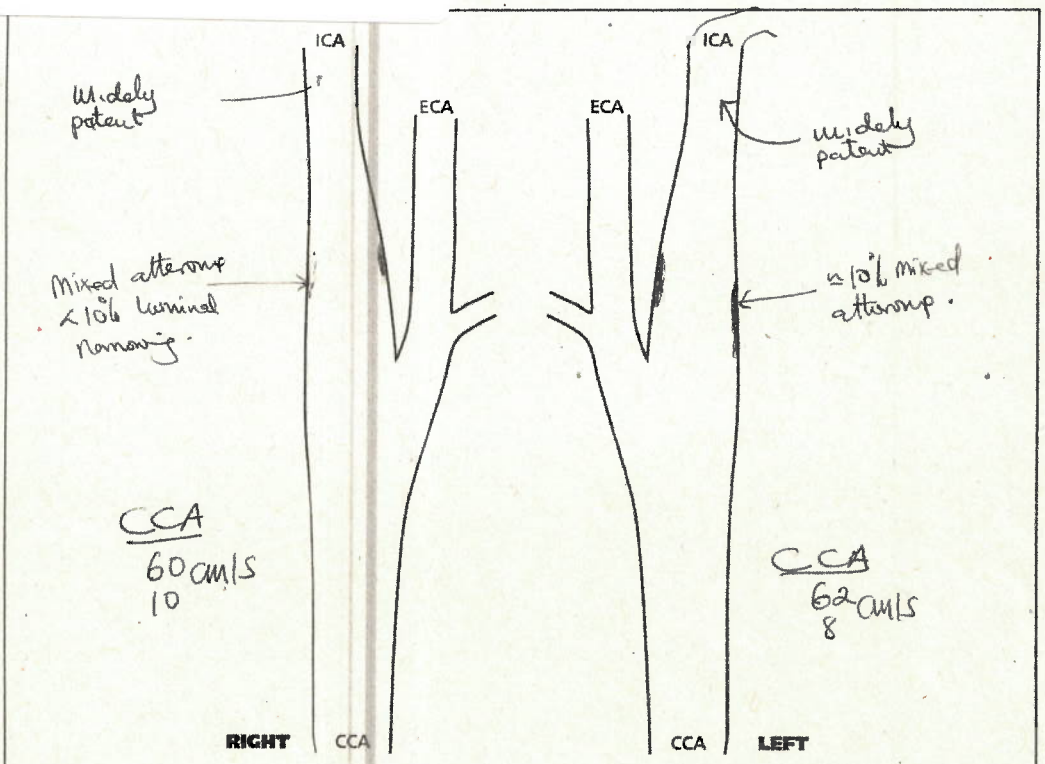
CAROTID DUPLEX SCAN REPORT

ISULTANT: MACHIN DEPT: TIA

IICAL HISTORY: HOSPITAL: LRI

Episode of slurred speech lasting for one hour 2days ago

MMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
HT	<10	52	11	fwd
EFT	<10	61	14	fwd



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SIGNED: [signature] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsian Lukinga DATE: 23/05/23

IMAGE QUALITY: GOOD ✓ POOR

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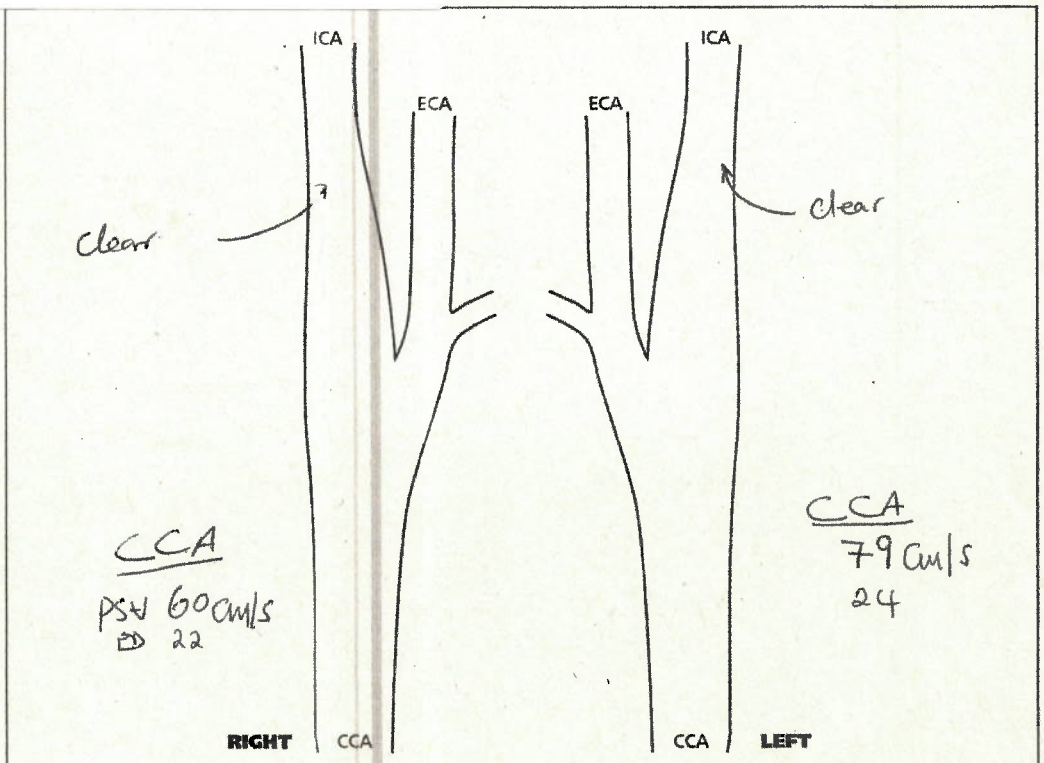
CAROTID DUPLEX SCAN REPORT

SULTANT: MACHILI DEPT: TIA

ICAL HISTORY: HOSPITAL: LRI

2 eye blurry and visual loss episode for 1-2 min.

IMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
AT	0	53	22	fwd
EFT	0	59	26	fwd



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PRINT NAME: Ponsiano Lukenge DATE: 23/05/23

IMAGE QUALITY: GOOD ✓ POOR

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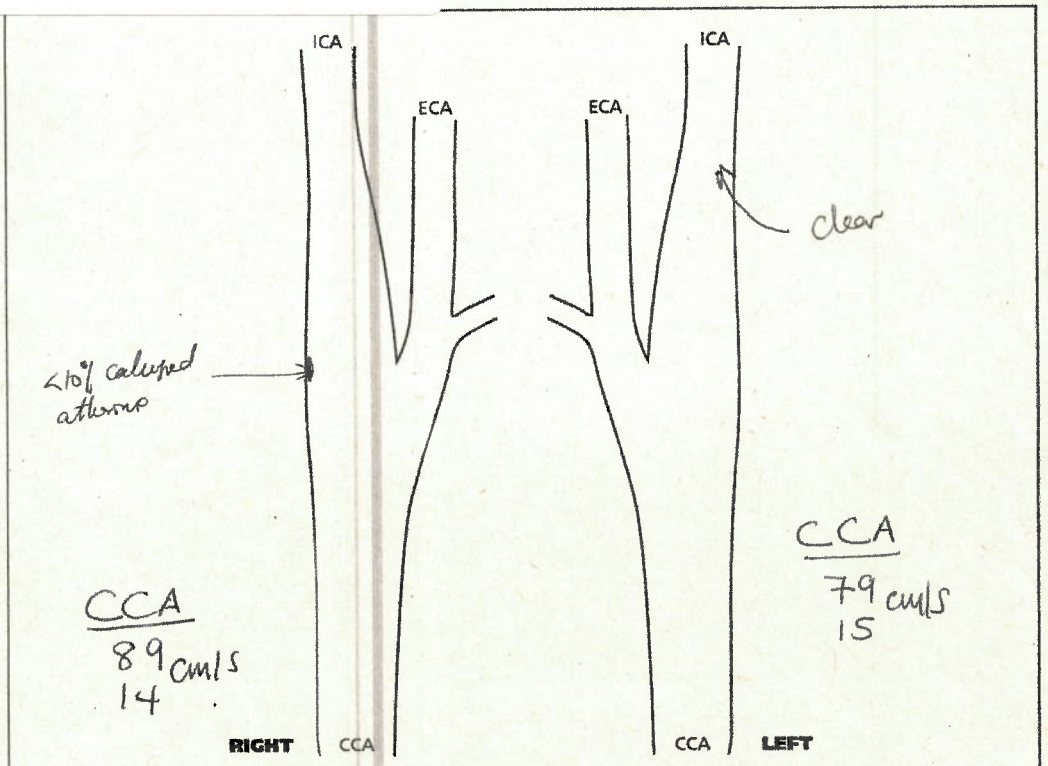
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MacNeill DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

Expressive dysphasia and confusion x 2.5hrs

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<10	59	16	fwd
LEFT	0	57	17	fwd



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PRINT NAME: Lukenga Ponnosa DATE: 23/5/23

IMAGE QUALITY: GOOD ✓ POOR

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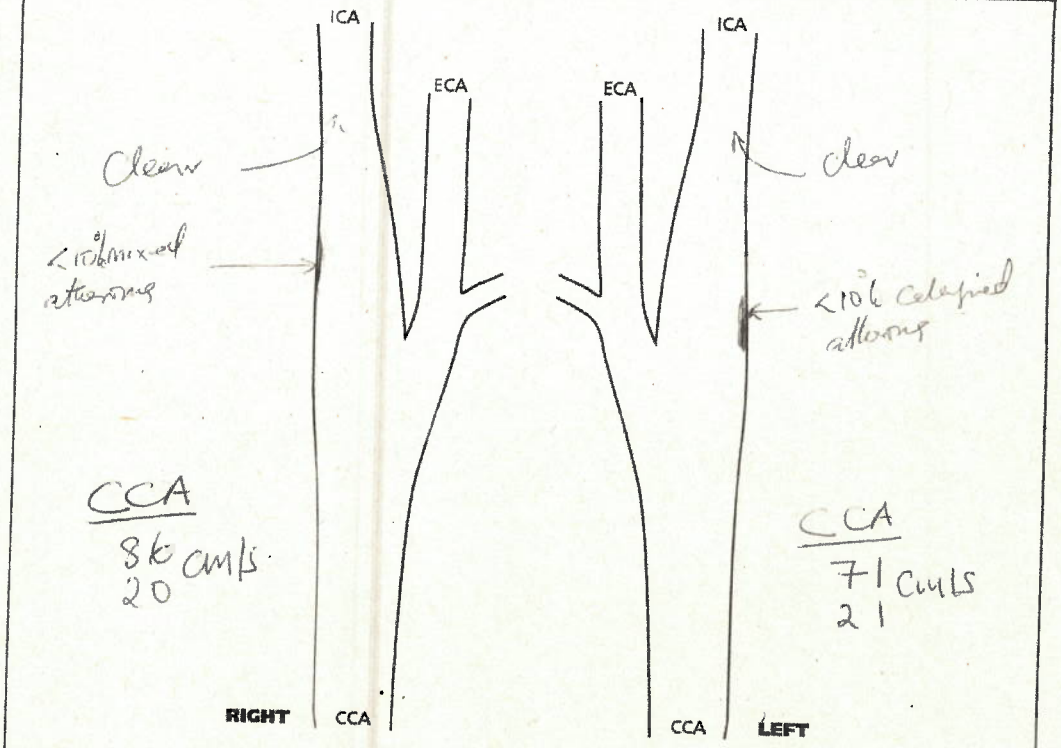
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MOQSITH DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

facial droop lasted 30mins.

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<10	60	21	fwd
LEFT	<10	58	24	fwd



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PRINT NAME: Ronsea Lukunge DATE: 22/04/23

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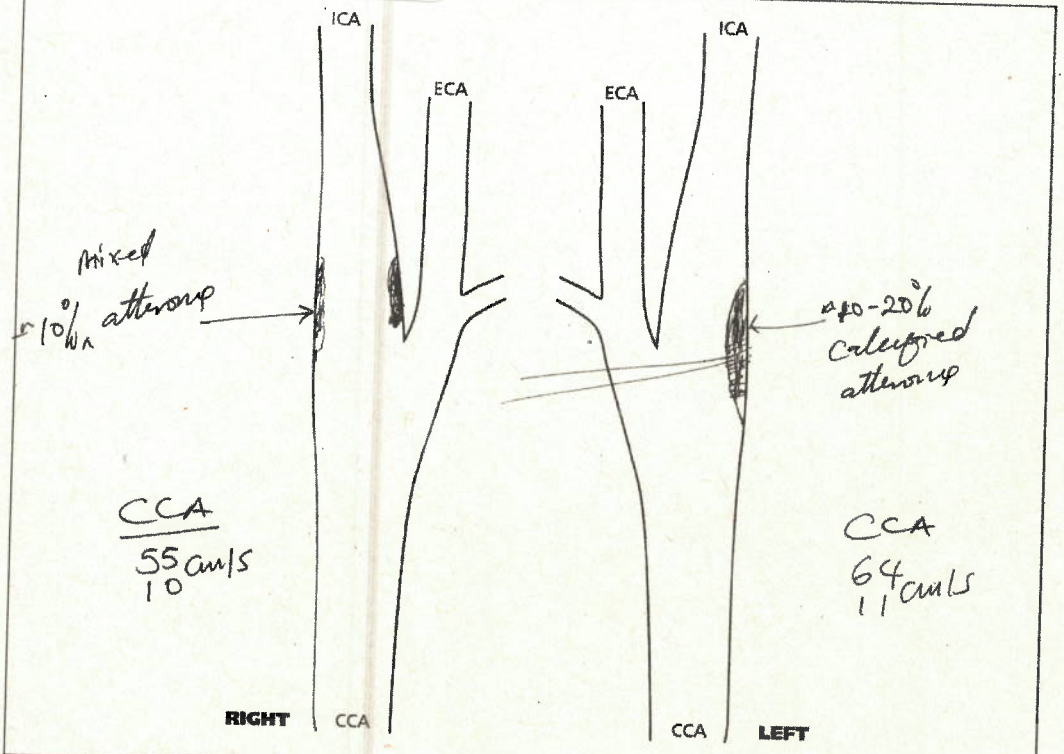
CAROTID DUPLEX SCAN REPORT

CONSULTANT: ~~Dr~~ THREADKELL DEPT: T+A

CLINICAL HISTORY: HOSPITAL: GRI

(R) LACS ? Cause

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	≤ 10	62	16	fwd
LEFT	≤ 10-20	80	23	fwd



COMMENTS:

SIGNED: ~~Ursi~~ CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsras LuKenge DATE: 28/04/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

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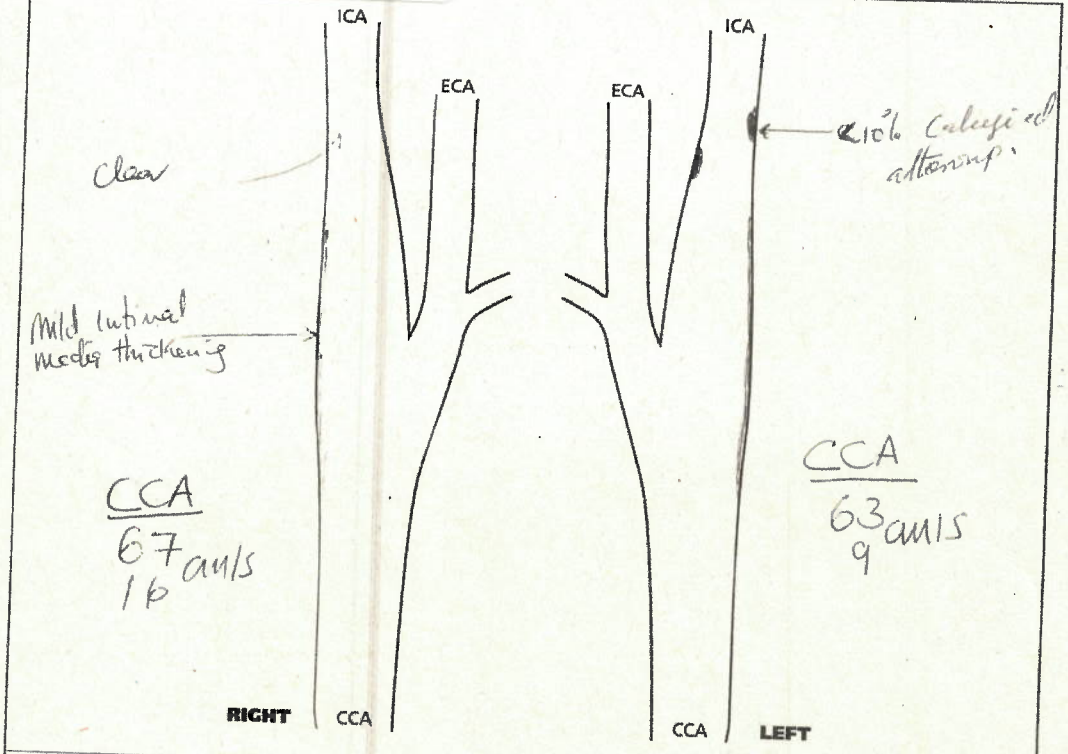
CAROTID DUPLEX SCAN REPORT

CONSULTANT: [illegible] DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

2 days ago at least 1 hour ? aphasia some [illegible] mild confusion

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	51	15	Fwd
LEFT	<10	49	13	Fwd



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PRINT NAME: Ponsias Lusinga DATE: 28/04/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

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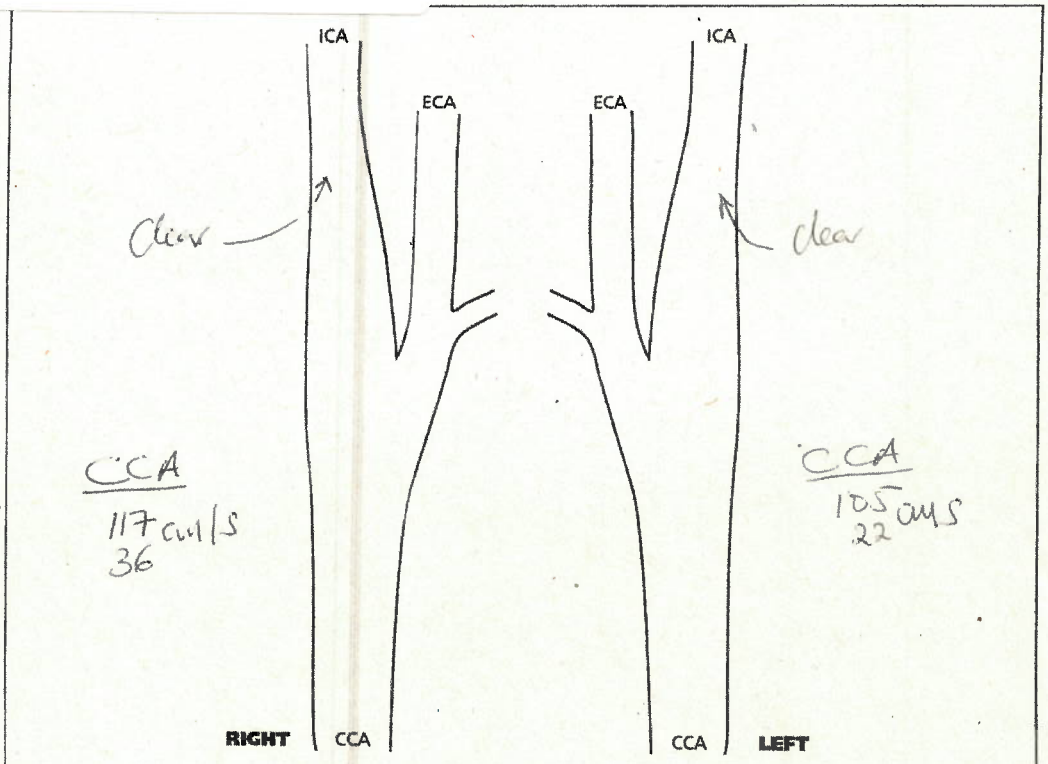
CAROTID DUPLEX SCAN REPORT

CONSULTANT: [illegible] DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

weakness of the left arm & leg, speech disturbance

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	61	26	fwd
LEFT	0	65	25	fwd



COMMENTS:

SIGNED: [illegible] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ronsino Luwanga DATE: 28/04/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

(Walker)5171144KR

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Glenfield Hospital
Tel: 0116 258 5440

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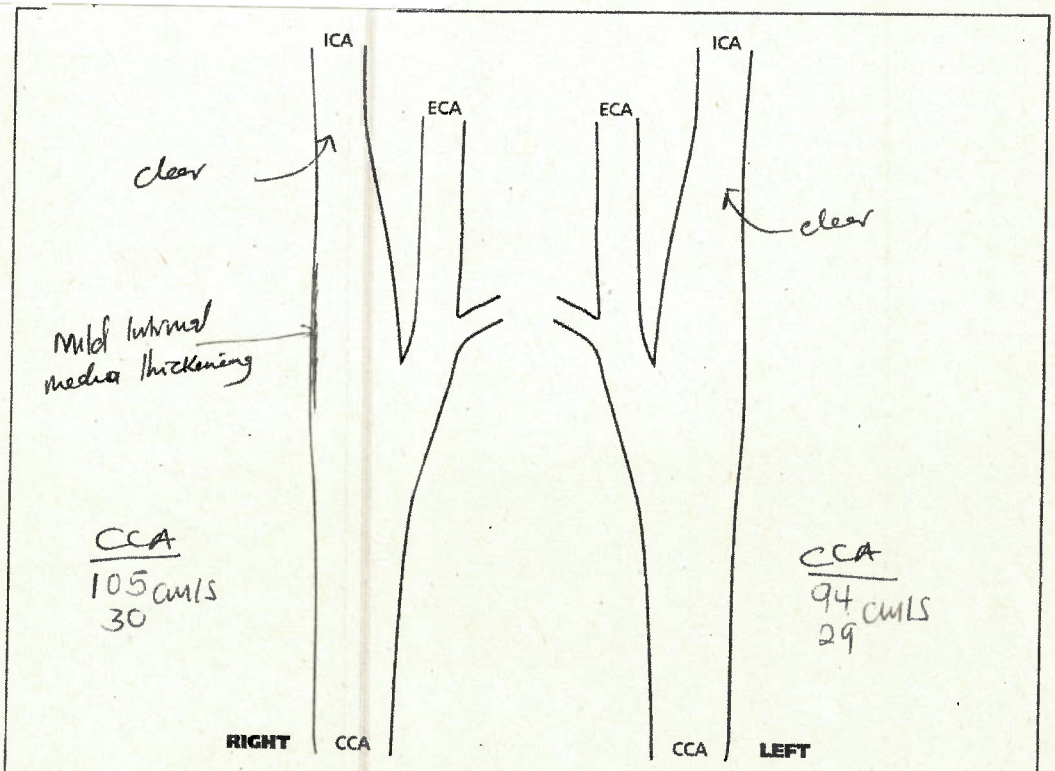
CAROTID DUPLEX SCAN REPORT

CONSULTANT: EVE Scott DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

Right sided weakness, mostly in R/H, unable to write

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	54	22	fwd
LEFT	0	48	19	fwd



COMMENTS:

SIGNED: CLINICAL VASCULAR SCIENTIST

PRINT NAME: DATE: 28/04/23

IMAGE QUALITY: GOOD / POOR

(Walker/517/1144KR

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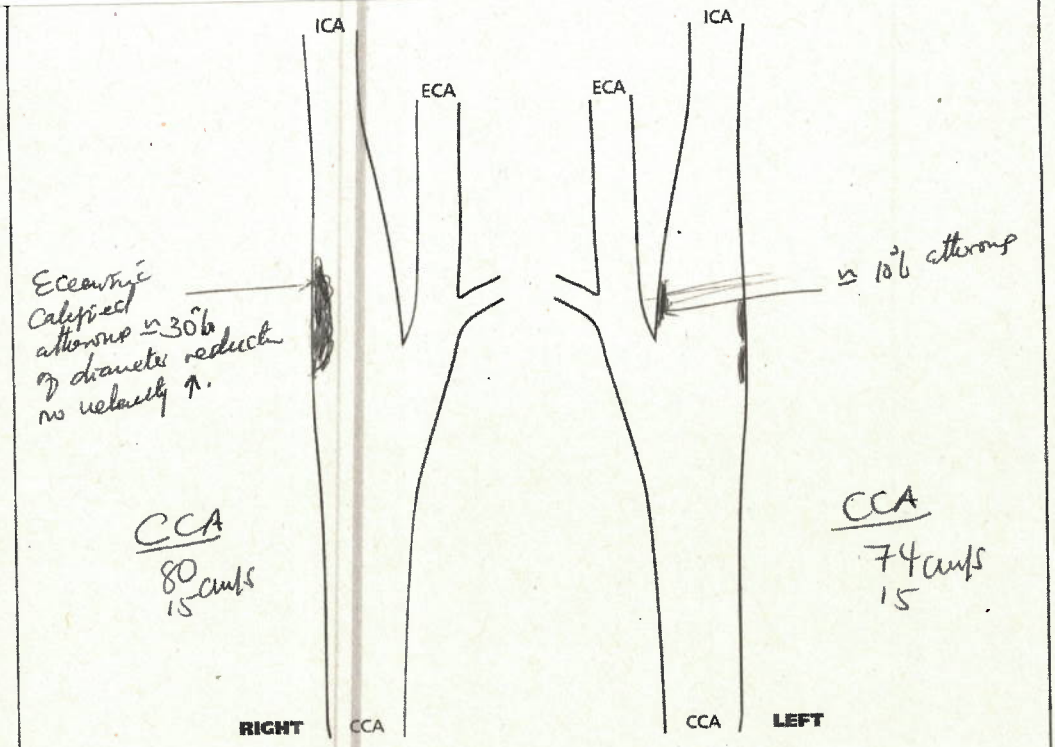
CAROTID DUPLEX SCAN REPORT

CONSULTANT: Machin DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

10min episode of slurred speech & facial droop

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	≤ 30	66	13	fwd
LEFT	≤ 10	47	6	fwd



COMMENTS:

SIGNED: [redacted] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ronsia Lukenge DATE: 19/05/23

IMAGE QUALITY: GOOD ◯ ✓ ◯ POOR

(Walker)5171144NR

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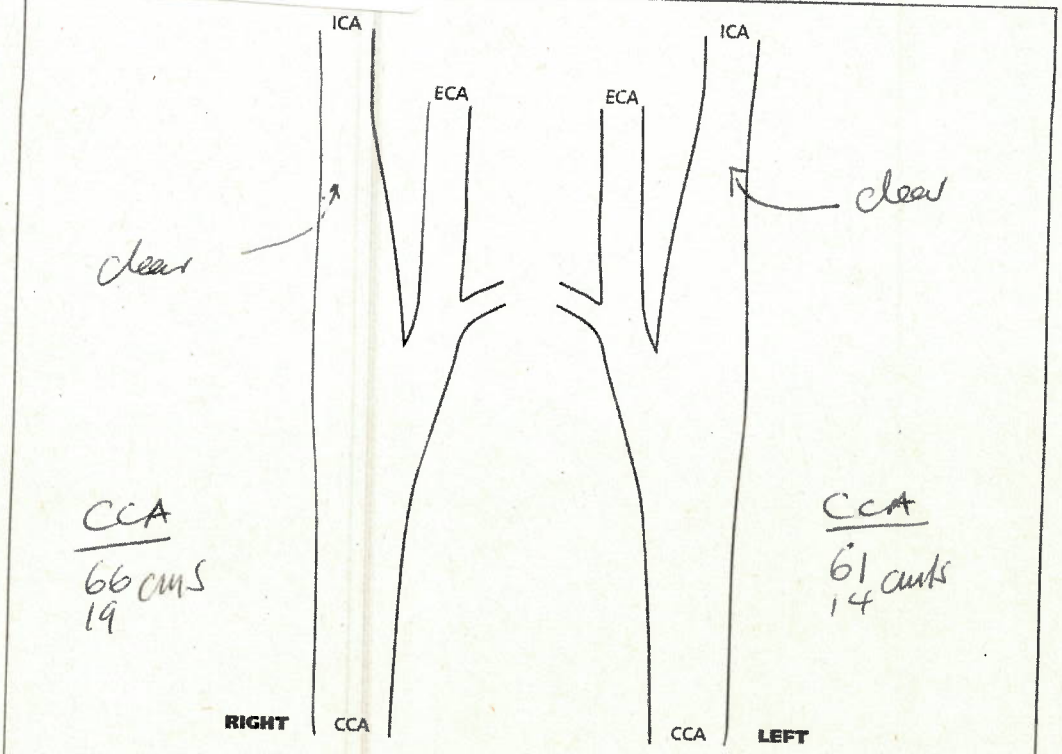
CAROTID DUPLEX SCAN REPORT

CONSULTANT: Barnsdale DEPT: RTIA

CLINICAL HISTORY: Difficult to mobilise ? Slurred Speech HOSPITAL: LRI

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	35	13	fwd
LEFT	0	42	13	fwd



COMMENTS:

SIGNED: [signature] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsaray Nkenge DATE: 28/3/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

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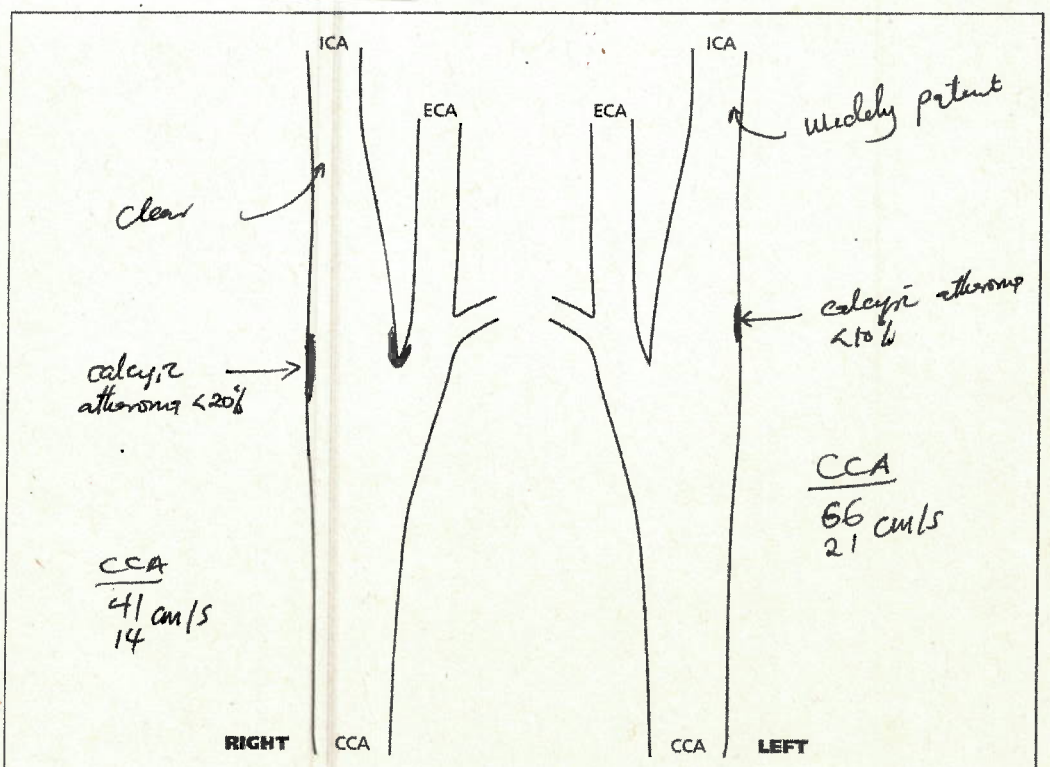
CAROTID DUPLEX SCAN REPORT

CONSULTANT: BANSAL DEPT: RTIA

CLINICAL HISTORY: Episodes of slurred speech x4 HOSPITAL: LRI

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<20	62	23	fwd
LEFT	<10	57	26	fwd



COMMENTS:

SIGNED: ~~dtau~~ CLINICAL VASCULAR SCIENTIST

PRINT NAME: Pontian McKenzie DATE: 28/03/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

(Walker)S1711144KR

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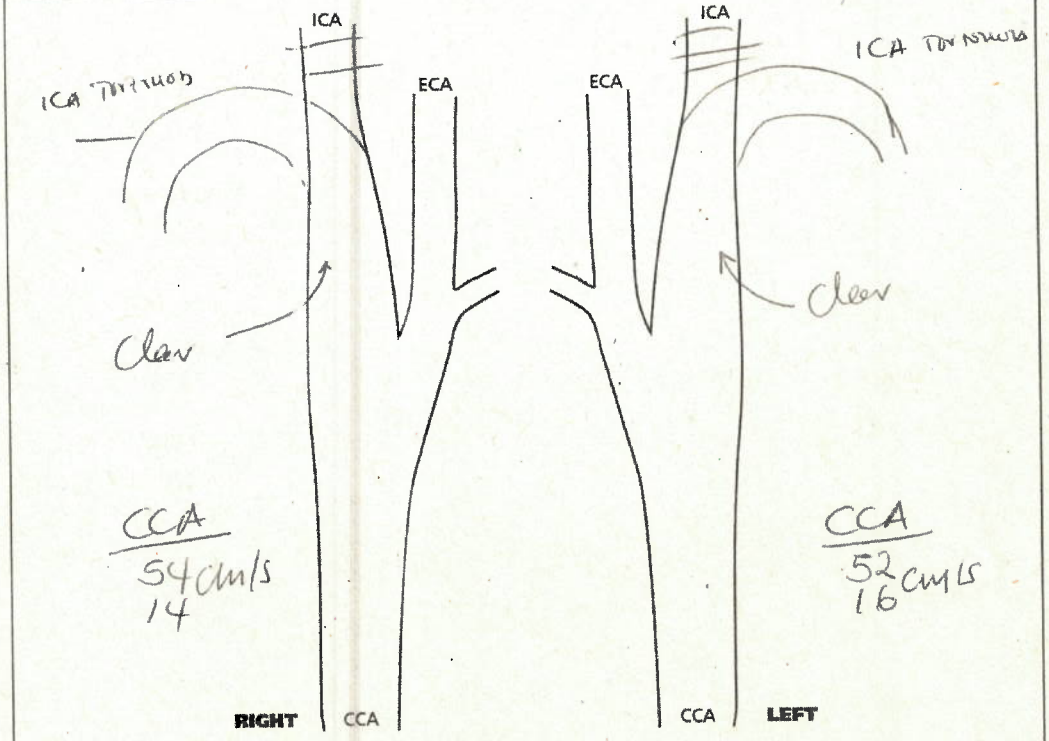
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MOOSITH DEPT: RIVA

CLINICAL HISTORY: HOSPITAL: LRI

sudden loss of vision in right eye lasted 5-7mins

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	70	20	fwd
LEFT	0	48	17	fwd



COMMENTS:

SIGNED: CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsian Lukenge DATE: 22/4/23

IMAGE QUALITY: GOOD ✓ POOR

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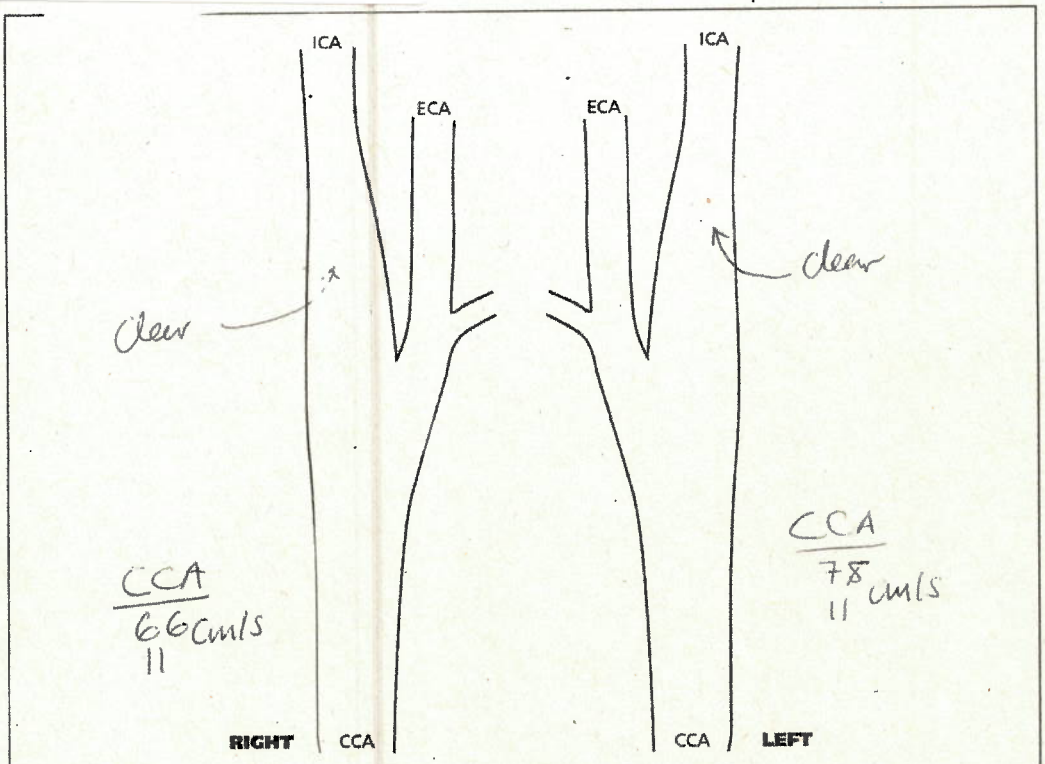
CAROTID DUPLEX SCAN REPORT

CONSULTANT: M2 Nevill/Smith DEPT: RTIA

CLINICAL HISTORY: Crescendo TIA HOSPITAL: LRI

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	51	13	Anterograde flow
LEFT	0	44	14	Anterograde flow



COMMENTS:

SIGNED: [signature] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ronsiers L. Kenge DATE: 25/04/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

(Walker)S171114KR

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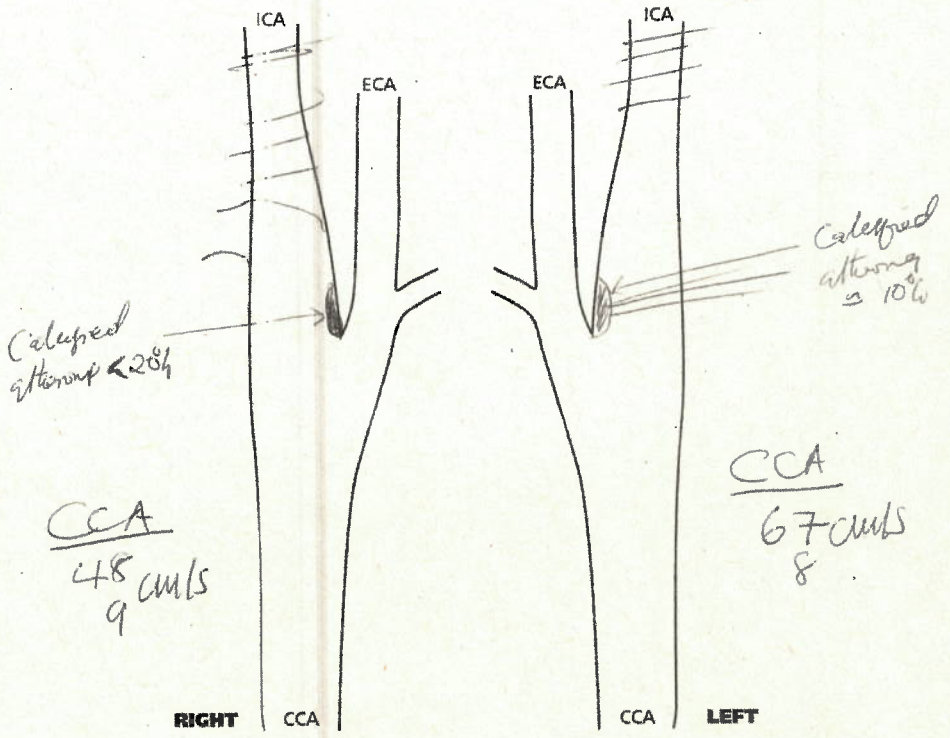
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MOUSITH DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

confusion and slurring of words.

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<20	70	14	fwd
LEFT	≤ 10	51	10	fwd



COMMENTS:

~~ICA~~ Distal ICAs were not visualised due to short, thick neck and deep seated carotids.

SIGNED: ~~illegible~~ CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsias Iwuegbu DATE: 23/04/23

IMAGE QUALITY: GOOD ◯ ✓ ◯ POOR

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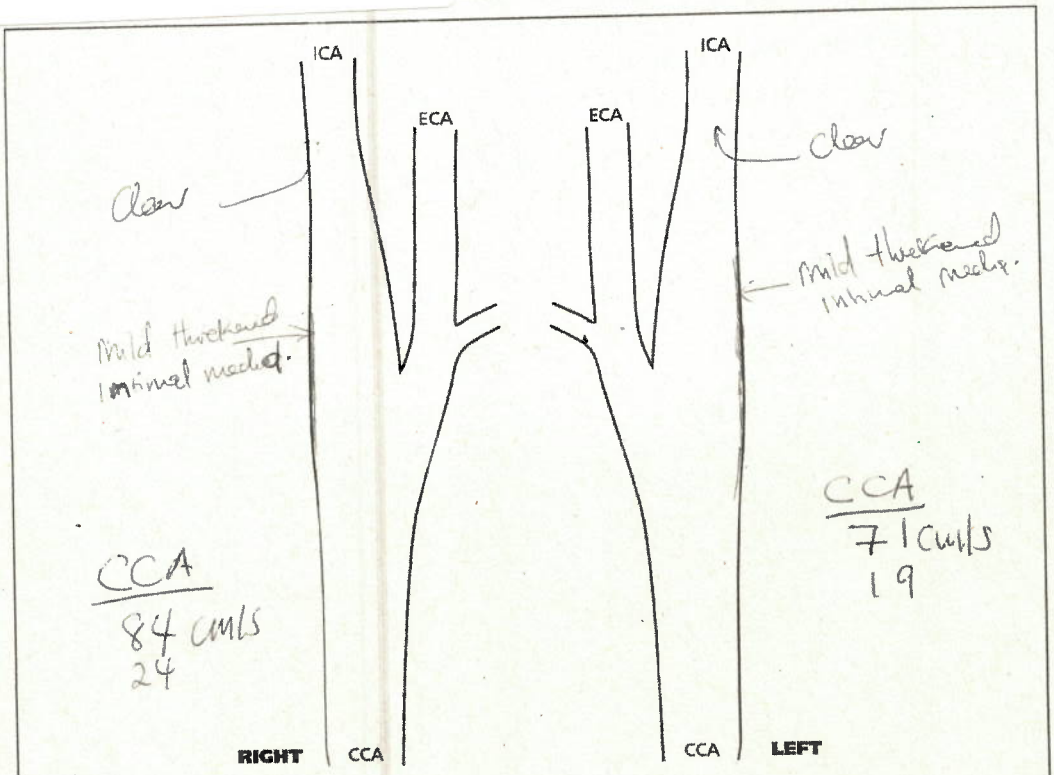
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MOQSITH DEPT: TIA

CLINICAL HISTORY: HOSPITAL: LRI

older man set of dizziness - ? unsteady walker

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	0	58	19	not seen
LEFT	0	56	25	?



COMMENTS:

SIGNED: CLINICAL VASCULAR SCIENTIST

PRINT NAME: DATE: 23/04/23

IMAGE QUALITY: GOOD ✓ POOR

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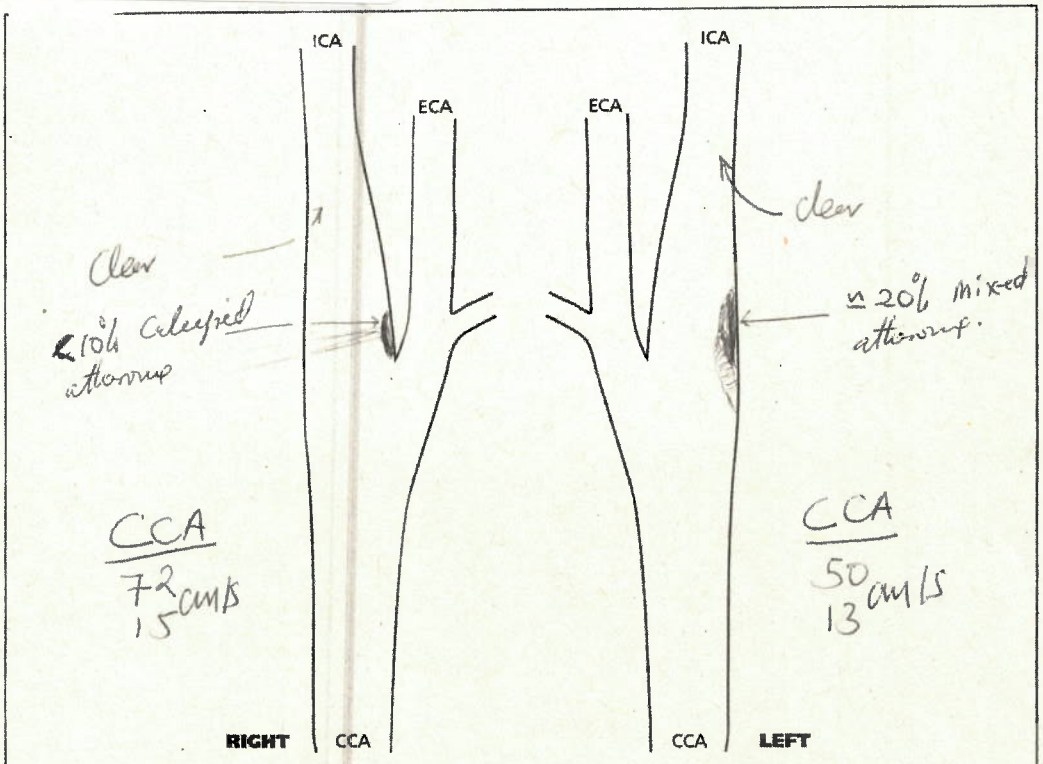
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MOORSITH DEPT: RTCA

CLINICAL HISTORY: HOSPITAL: LRI

Had episodes where hy she became more dizzy tb

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	<10	59	22	fwd
LEFT	~20	46	18	fwd



COMMENTS:

SIGNED: _____ CLINICAL VASCULAR SCIENTIST

PRINT NAME: Ponsias Lukenge DATE: 22/04/23

IMAGE QUALITY: GOOD ✓ POOR

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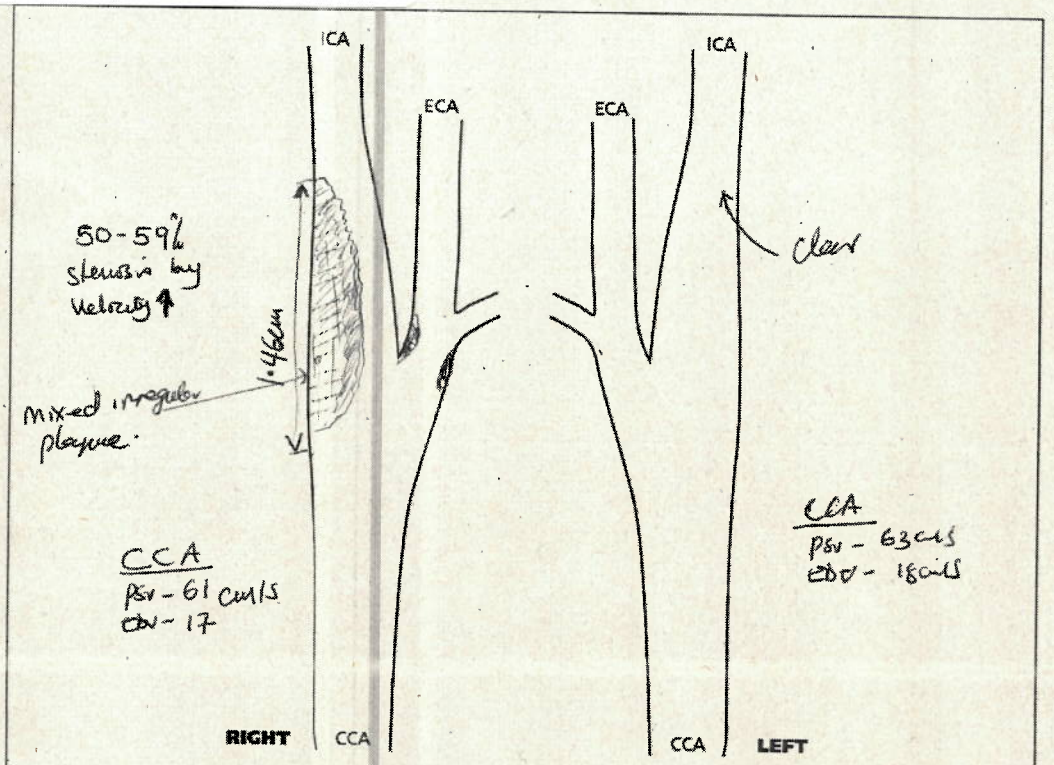
CAROTID DUPLEX SCAN REPORT

CONSULTANT: TRENDWELL DEPT: RTIA

CLINICAL HISTORY: HOSPITAL: LRI

(L) numbness

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	50-59	166	51	fwd
LEFT	0	68	30	fwd



COMMENTS:

NASCET [illegible] was used.

SIGNED: [illegible] CLINICAL VASCULAR SCIENTIST

PRINT NAME: [illegible] DATE: 09/06/23

IMAGE QUALITY: GOOD ✓ ○ ○ POOR

(Walker/s171144KR

STROKE / TIA DETAILS

Date Index Event: _____

Date most recent symptoms: _____

Type of symptoms: Amaurosis Fugax
TIA
Stroke

Pre-op Rankin score: _____

Age: _____ Sex: Male ☐ Female ☐

TCD (30 minute monitoring MCA)

Side: (Left) / ~~Right~~ Depth(cm): 53.0

Mean flow (cm/s): 19.0

~~Emboli:~~ ~~Yes~~ ☐ ~~No~~ ☐ ~~Number:~~ window check

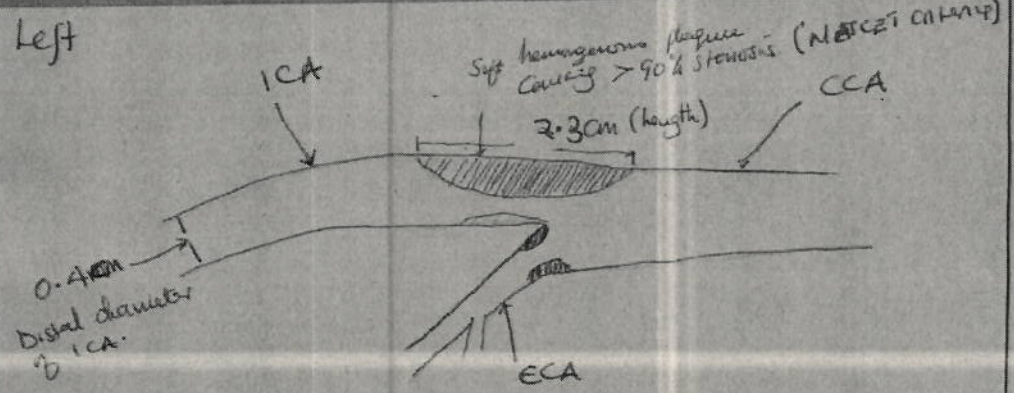
TCD Window: Easy ⊘ ○ ○ ○ ○ Difficult

Signature: [signature]

Print Name: KEVIN C

Date: 13/01/23

VSU PRE-OP CAROTID SCAN DIAGRAM



CEA side	%ICA Stenosis	ICA PSV	ICA EDV	CCA PSV	CCA EDV	ICA dist lumen dia	Bifurcation level
LEFT	>90	446	228	86	23	0.4cm	Low / (med) / high

Signature: ~~[signature]~~

Name: Poustawa Lukenge CVS date: 13/01/2023

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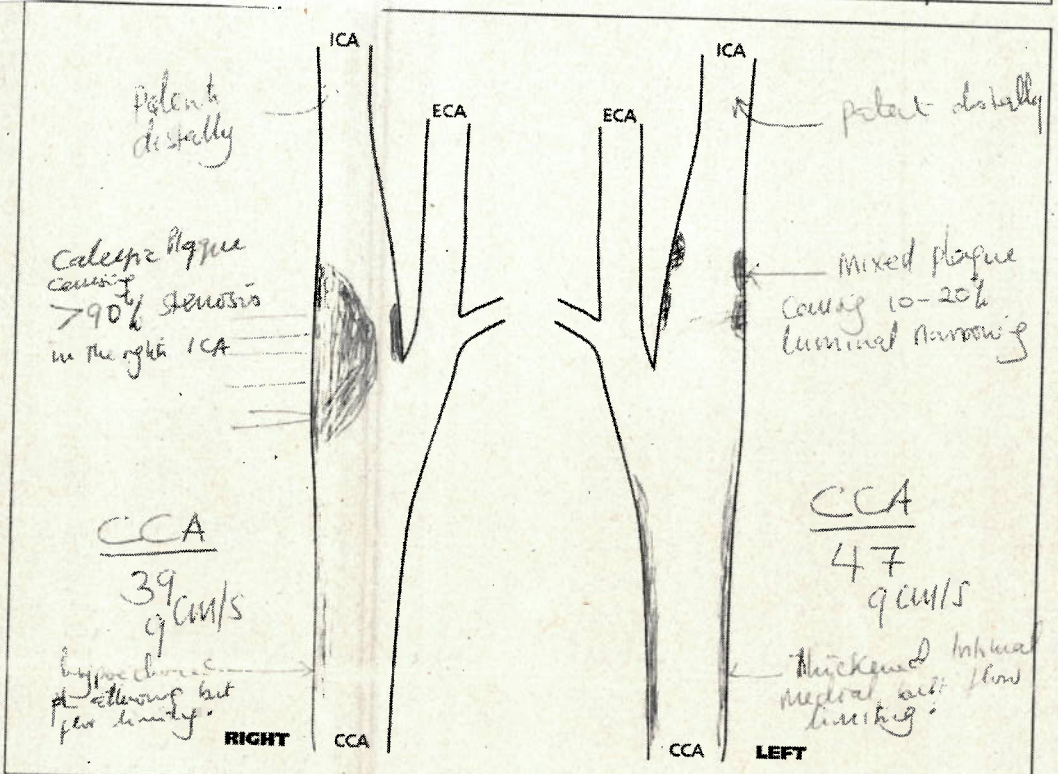
CAROTID DUPLEX SCAN REPORT

CONSULTANT: DEPT:

CLINICAL HISTORY: unilateral facial droop, slurred speech HOSPITAL:

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	790	450	166	fwd
LEFT	10-20	51	18	fwd



COMMENTS: Medical hx: Has not specified which side with symptoms but been informed by Cardiac Team was right side. Despite the symptoms on right there is ≥90% stenosis in the right ICA.

SIGNED: [redacted] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Pansun Likeyi DATE: 25/01/23

IMAGE QUALITY: GOOD ○○○ POOR

(Walker)(5)17111-4KR

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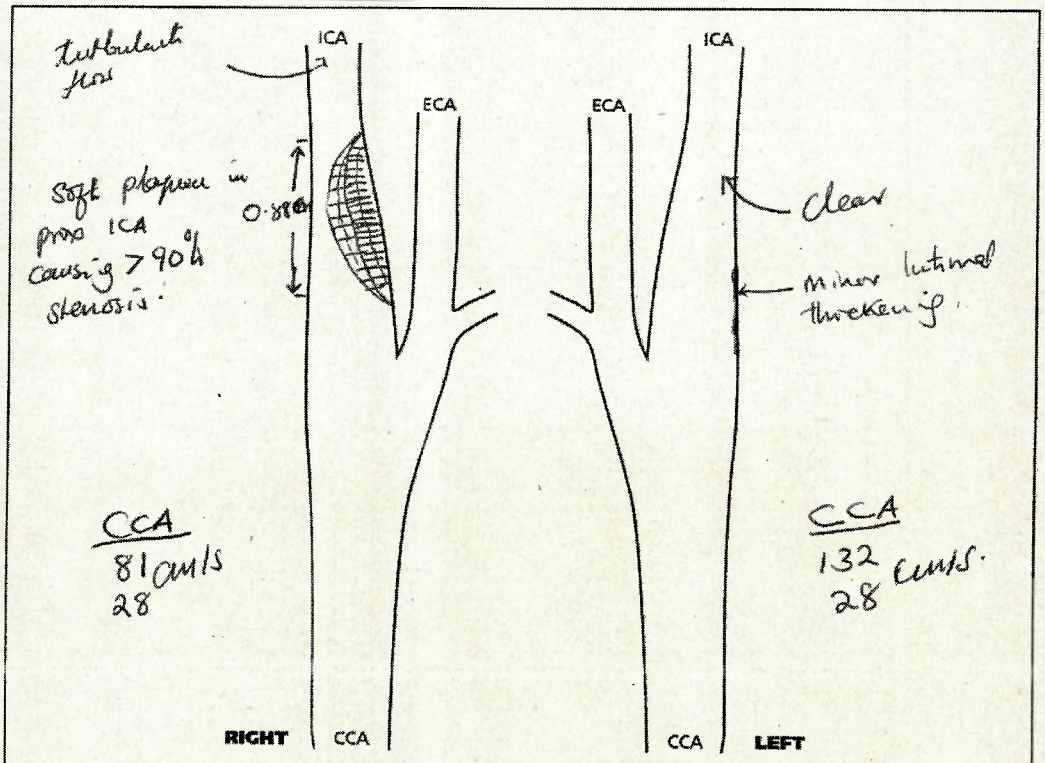
CAROTID DUPLEX SCAN REPORT

CONSULTANT: MR Mistri DEPT: RI
CLINICAL HISTORY: Acute onset of left temporal headache with episodes of expressive aphasia for 5 days. HOSPITAL: LRI

SUMMARY	%STENOSIS	ICA PSV cm/s	ICA EDV cm/s	VERTEBRAL FLOW
RIGHT	>90	441	239	turbulent flow
LEFT	0	109	36	possible partial steal



COMMENTS: >90% stenosis in prox right ICA (NASCET criteria) possible partial subclavian steal in the left vertebral artery, pt was unable to keep hand on her back (spine position). to account for the narrowing of subclavian artery.

SIGNED: [illegible] CLINICAL VASCULAR SCIENTIST

PRINT NAME: Poonam Lukenge DATE: 4/01/23.

IMAGE QUALITY: GOOD ○ ✓ ○ POOR

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