AVR ST Elevation Myocardial Infarction: A Not So Urgent Cardiac Emergency. A Single Tertiary Center Experience in Malaysia

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Disclosure

- I have nothing to disclose

Introduction

- Hospital Raja Permaisuri Bainun (HRPB) is located in Ipoh, capital of state of Perak in Malaysia
- The **only public hospital** which provides cardiology service in the state of Perak. Population of **2.5 million**
- The cardiology referral center for the whole state of Perak
- Thrombolysis is still the mainstay of STEMI reperfusion method in this state due to limited resources (cath lab and manpower)
- **No in-house Cardiothoracic (CTC) service**. Nearest public CTC centers are in other states, ~ 2 hours journey


POCOPHONE
SHOT ON POCOPHONE F1

Background

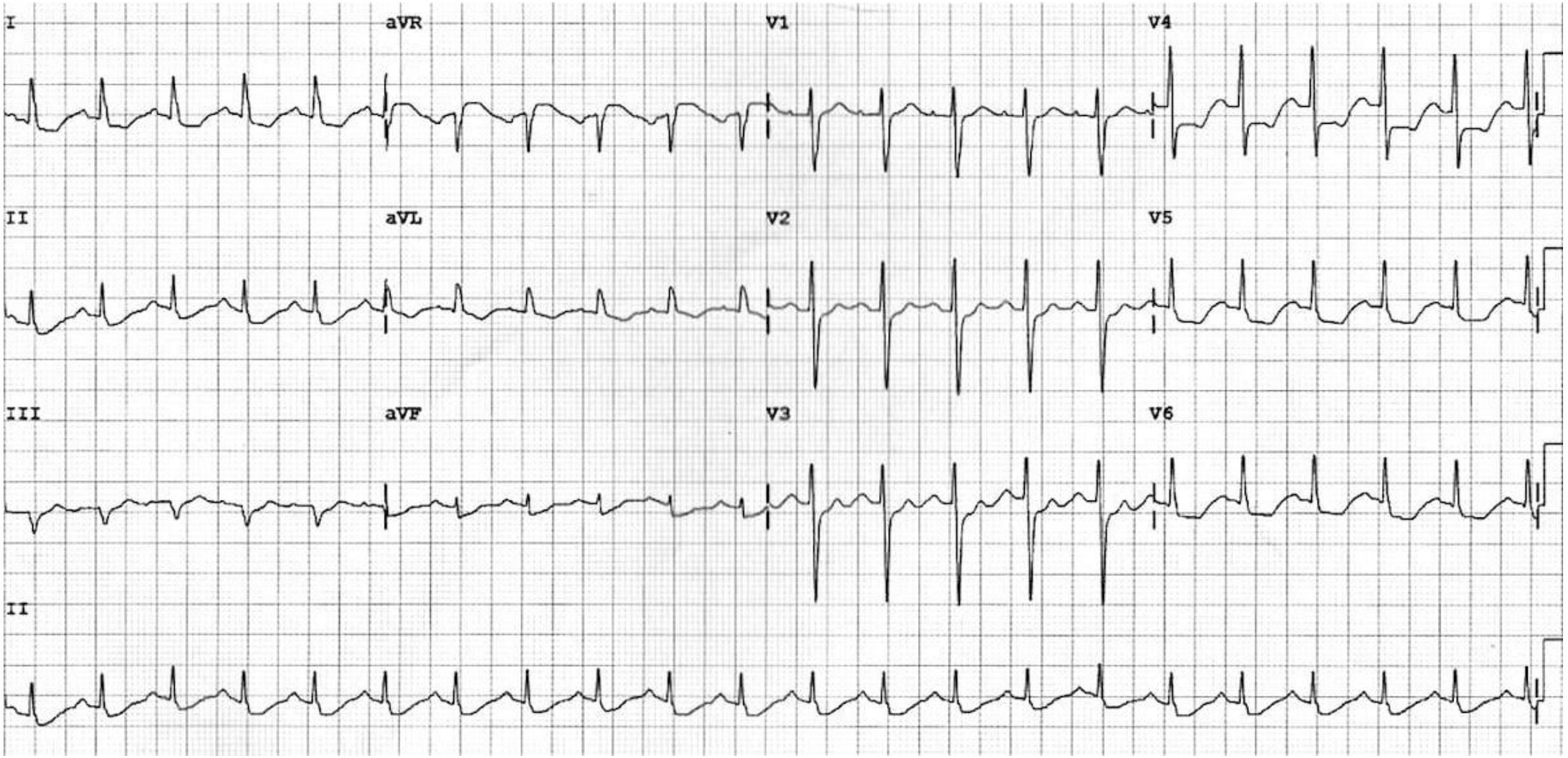
- AVR STEMI is well recognized as a sign of acute occlusion of the left main stem (LMS) or proximal left anterior descending(LAD) coronary artery
- But is aVR STEMI always associated with acute thrombotic coronary occlusion?
- What is the best acute management of aVR STEMI?

Objectives

- To investigate the incidence of an acute total occlusion in culprit coronary vessel in patients presenting with aVR STEMI
- 3 months clinical outcome of these patients
- Most suitable acute management: whether there’s a need immediate coronary angiogram + reperfusion

Methods

- A retrospective, single center study on all aVR STEMI admissions between January 2018 and January 2020
- All electrocardiograms and coronary angiograms were analyzed by experienced cardiologists
- aVR STEMI was defined as typical acute chest pain with ST elevation in aVR ≥ 1 mm, ST elevation in aVR ≥ V1, and widespread horizontal ST depression in other leads



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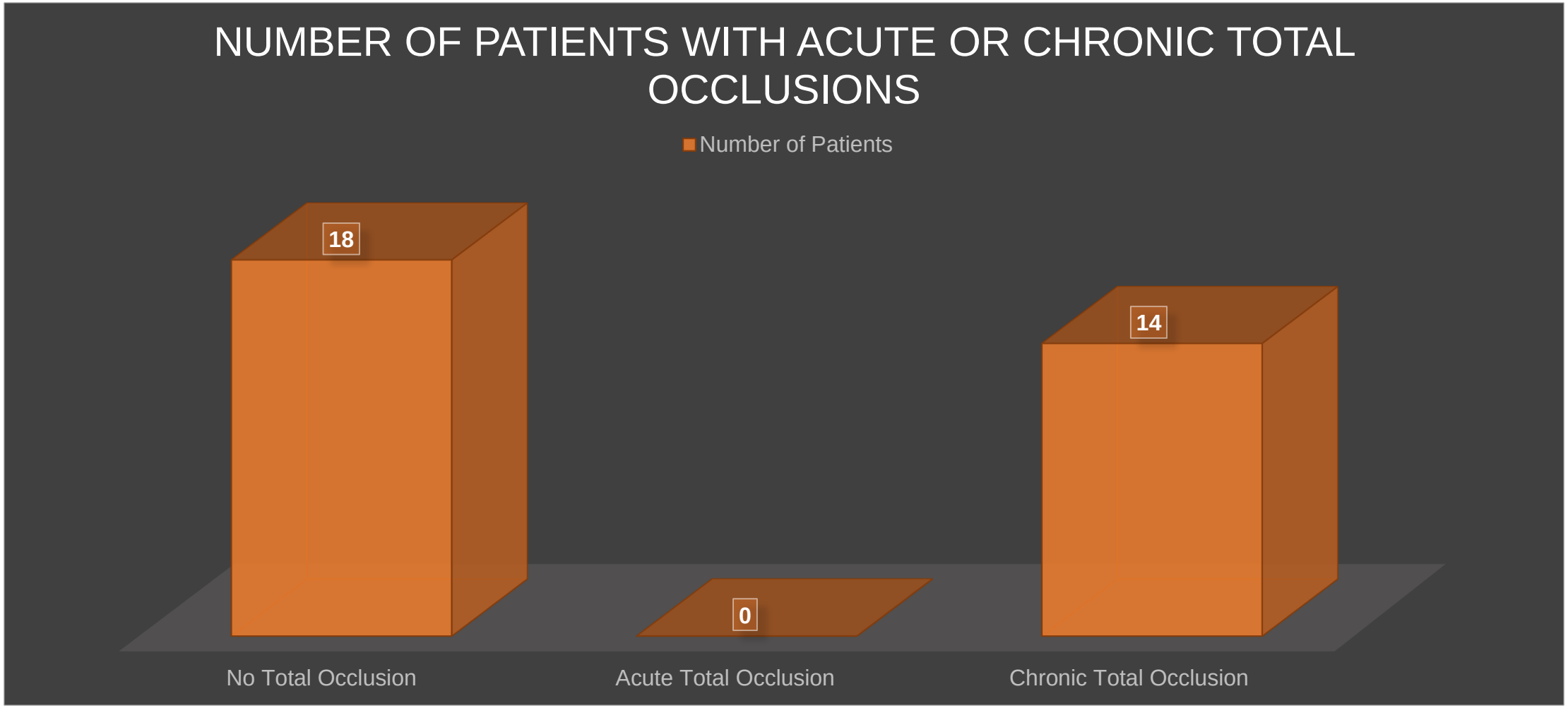
Findings

- Total of 1147 STEMI admissions in study period
- 32 of them (2.8%) had aVR STEMI
- None were thrombolysed but all undergone coronary angiography during index admission
- Mean waiting time from admission to date of coronary angiography was 3.7 days

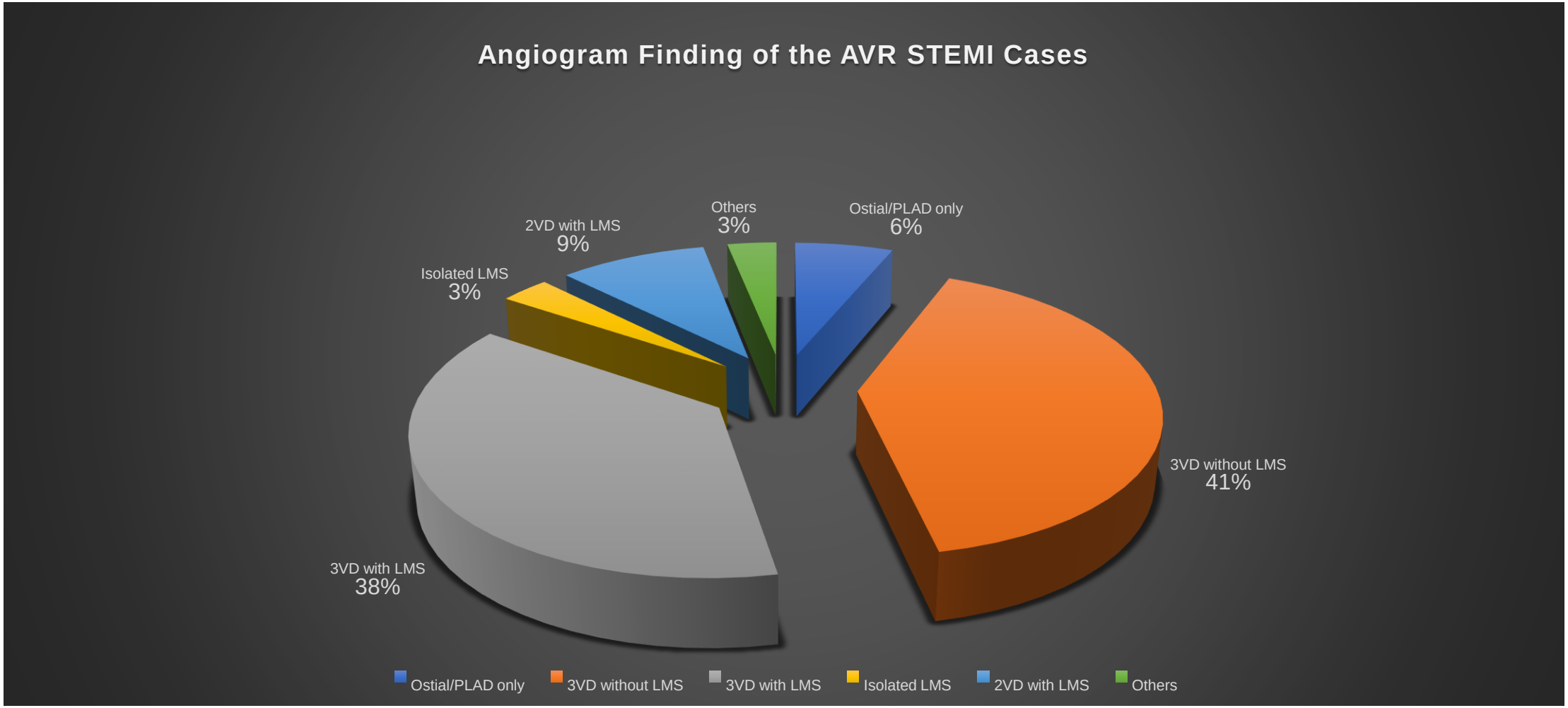
Patient Characteristics

Characteristic	N
Age (years)	62.5±10.1
Male sex	19 (59.4%)
Diabetes mellitus (%)	62.5
Hypertension (%)	84.4
Dyslipidaemia (%)	31.3
Chronic kidney disease (%)	18.8
Smoker (%)	12.5
Mean LVEF(%)	45.4 (± 13.3)
Mean eGFR (ml/ min/ 1.73 m^2)	58 (± 25)

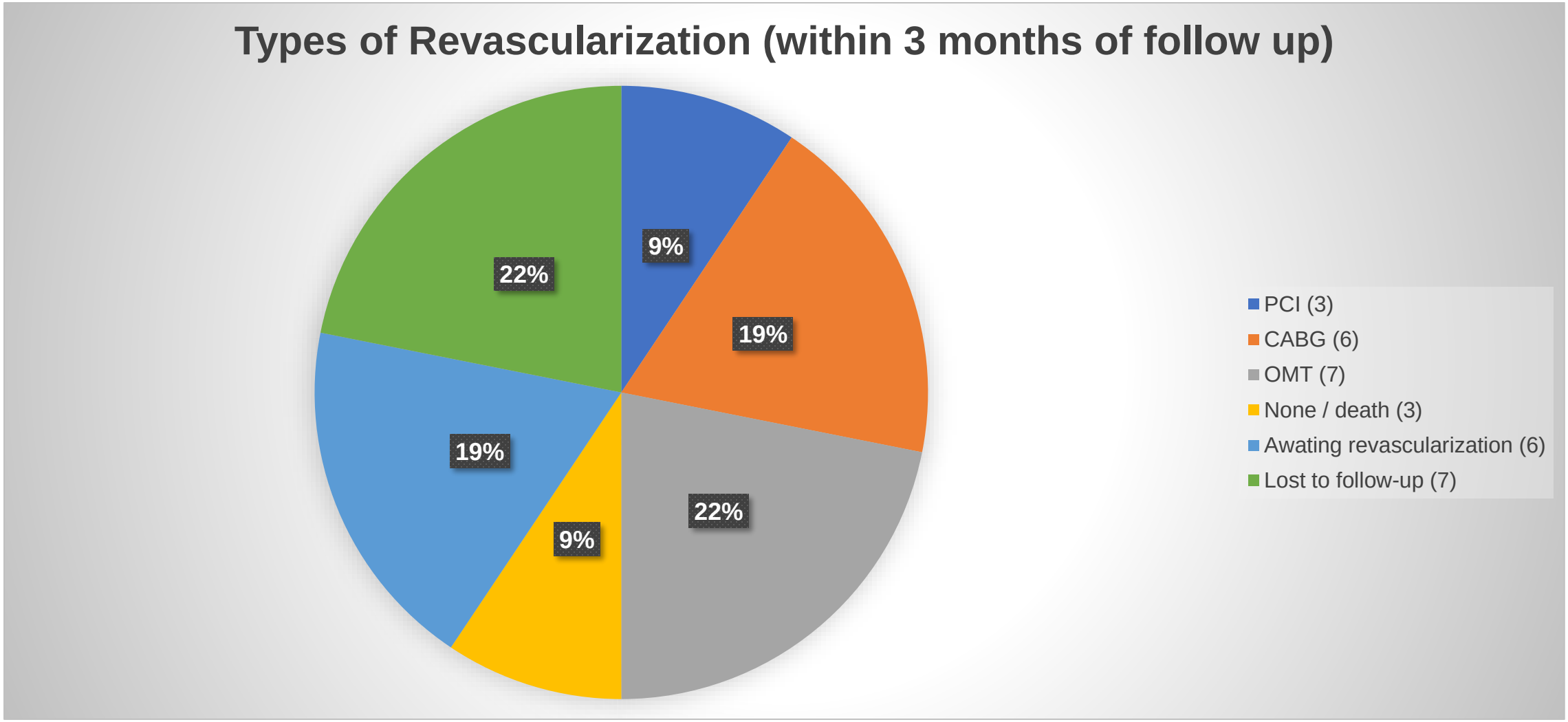
Results


NUMBER OF PATIENTS WITH ACUTE OR CHRONIC TOTAL OCCLUSIONS
Number of Patients
18
0
14
No Total Occlusion
Acute Total Occlusion
Chronic Total Occlusion

Results


Angiogram Finding of the AVR STEMI Cases
Ostial/PLAD only
6%
3VD without LMS
41%
3VD with LMS
38%
Isolated LMS
3%
2VD with LMS
9%
Others
3%
Ostial/PLAD only
3VD without LMS
3VD with LMS
Isolated LMS
2VD with LMS
Others

Results


Types of Revascularization (within 3 months of follow up)
9%
19%
22%
9%
19%
22%
PCI (3)
CABG (6)
OMT (7)
None / death (3)
Awating revascularization (6)
Lost to follow-up (7)

Results

- Mean waiting time for CABG (done within 3 months) from diagnostic angiogram: 60.3 days
- All PCIs were done in the same setting as diagnostic angiogram
- Out of the 7 patients in OMT, 4 refused CABG
- The other 3 in OMT group:
  - 1 patient had poor distal target → not suitable for CABG
  - 1 patient had poor EF with non-viable myocardium as shown by nuclear perfusion scan
  - 1 patient had only 50-60% stenosis on proximal LAD (moderate CAD)

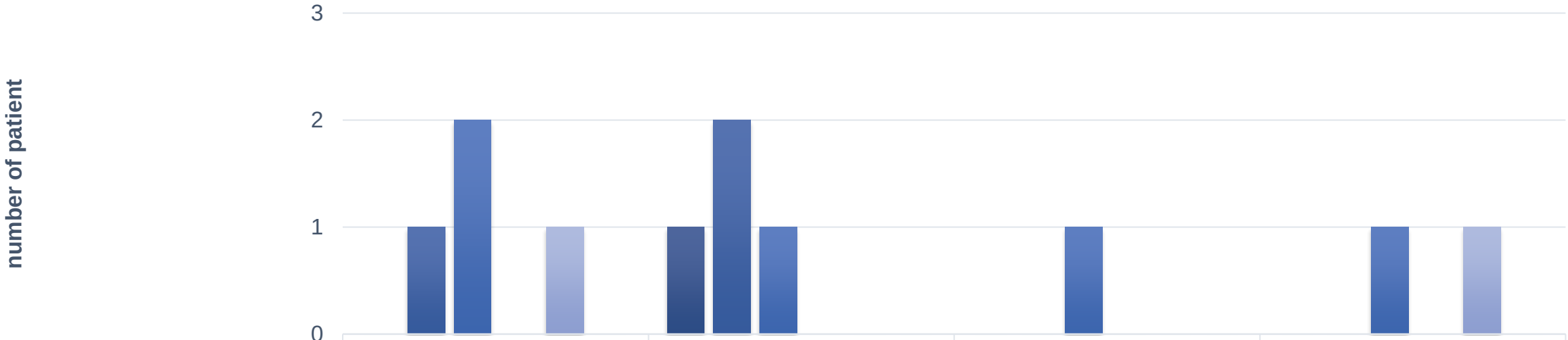
Results

- Out of the 7 patients in “lost to follow-up” group:
  - 6 were offered outpatient CABG
  - 1 was transferred to CTC in another center during index admission

- Out of the “awaiting revascularization” group:
  - 5 were awaiting outpatient CABG
  - 1 was awaiting stage PCI (ostial LAD CTO)

Results

Number of Readmission And Death Within 3 Months Post Angiogram



	Readmit within 1 month	Readmit within 3 month	Death within admission	Death within 3 months
Ostial / pLAD involvement only	0	1	0	0
3VD without LMS	1	2	0	0
3VD with LMS	2	1	1	1
Isolated LMS	0	0	0	0
2VD with LMS	1	0	0	1
Others	0	0	0	0

Results

- All the patients who passed away are with LMS involvement
  - 3VD with LMS involvement: 2
  - 2VD with LMS involvement: 1

- None of these patients received any form of revascularization

Discussion

- Previously the ignored lead, aVR has garnered more attention recently
- Associated with significant left main or ostial / proximal left anterior descending (LAD) coronary artery occlusion
- Also has been associated with triple vessel coronary artery disease (3VD)
- Incidence of each is not well established

Discussion

- Our study shows 0 incidence of acute total occlusion
- However, 14 patients (43.8%) had chronic total occlusion
  - Differentiated from acute total occlusion with presence of collaterals from other coronary vessels
- 25 patients (78%) had 3VD either with or without left main involvement
- Many of these patients may not be appropriate candidates for emergent catheterization **(ESPECIALLY AT NIGHT!)**

Discussion

- Early revascularization by means of CABG is recommended especially for those with left main involvement
- Mortality for LMS vs non-LMS involvement: **18.3 % vs 0 % (p = 0.034)**
- Patients who had undergone revascularization were alive within 3 months post angiogram

Limitations

- Studied population is from a single-center cohort experience
- Small sample size: only 32 patients
- Short follow up time; study period cut short due to **COVID-19 pandemic** → temporary shutdown of cardiology outpatient services
- Some patients lost to follow-up beyond 3 months
  - No in-house cardiothoracic team, hence patients were referred out to CTC team in other states for CABG

Conclusion

- AVR STEMI **was not associated** with acute thrombotic coronary occlusion in our study population. Hence, thrombolysis or primary PCI may not be indicated
- **Early catherization** is important during index admission (although may not be within 24 hours of admission)
- **Mortality is higher for patients with significant LMS lesion** as compared to non-LMS involvement aVR STEMI patients
- This study helps us to do risk stratification on which types of cases that need emergent catheterization particularly in a center / state with limited resources (cath lab and manpower)