

INTRODUCTION

The South African flag sign is an electrocardiogram (ECG) pattern that is associated with high lateral ST-segment elevation myocardial infarction (STEMI), a condition that requires immediate intervention. Based on previous literature, this ECG pattern was caused by a sudden blockage of the left anterior descending coronary artery (LAD-D1).

CASE DESCRIPTION

A 54-year-old Malay male presented with typical acute severe chest pain that started within three hours. His condition was stable with clear lung auscultation. Upon arrival, the ECG revealed ST-segment elevation over I, aVL, and V2, with reciprocal ST-segment depression over lead III. The STEMI Network was activated for Primary Percutaneous Cardiac Intervention (PPCI), and the patient was sent for urgent PCI at a cardiac centre that was located 34 kilometres away. PPCI shows occlusion over the Ramus Intermedius (RI) artery that was successfully stented. The procedure was deemed successful with complete resolution of angina pain.

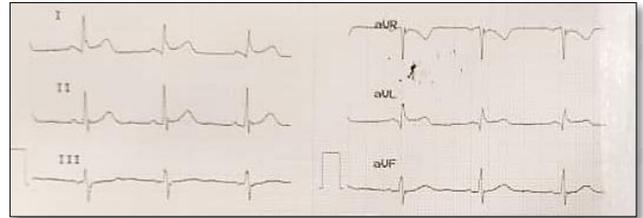
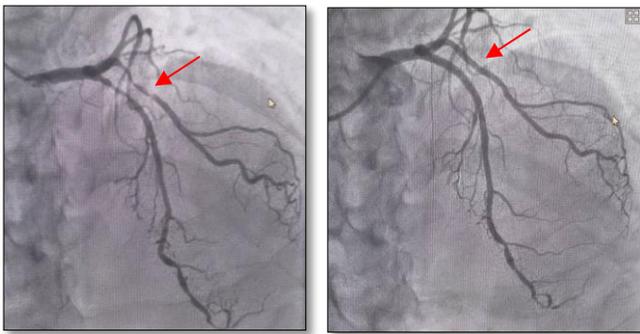


Figure 1: ECG on arrival to the Emergency Department

DISCUSSION

The South African flag sign was first described in 2015 with the ECG characteristic of ST-segment elevation of lead I, aVL and V2 with ST-segment depression in lead III ⁽¹⁾. This is an ECG sign that was known to represent the acute occlusion of LAD-D1. However, this sign can also represent acute occlusion in multiple other arteries. A study done in 2021 found that this ECG pattern can be seen in cases of acute coronary occlusion of the LAD-D1 (41.9%), left circumflex-obtuse marginal (LCX-OM11) (19.4%), LAD (32.3%), and RI (6.5%) ⁽²⁾. As shown in this case, the culprit artery that was identified was the RI artery. The RI artery is a variant coronary artery that arises from the left main bifurcation angle (LMBA) that occurs only in 20% of the population. The presence of this artery increases coronary turbulence flow and reduces the endothelial shear stress that theoretically promotes atherosclerotic plaque formation.



Picture 1 (left): Angiogram image of RI Artery with 95% stenosis
Picture 2 (right): Angiogram image after PPCI of the same artery

CONCLUSION

The South African flag sign is an ECG sign that requires urgent attention and intervention. This ECG pattern should be made known to every physician and medical officer working in the emergency department, as any delay of intervention may lead to worse patient outcomes.

REFERENCES

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KEY WORD: STEMI, CORONARY, ECG