

Case Report

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Hand Knob Area Infarct Following Primary Percutaneous Coronary Intervention: A Case Report

NT Weerasinghe, RC Palliyaguruge, UGC Kumara, WGNM Weerasinghe, LK Dissanayake, HL Hordagoda, PJP Peiris

National Hospital Kandy, Sri Lanka.

Correspondence:

NT Weerasinghe

E mail: thivankaw@gmail.com

 <https://orcid.org/0000-0001-8979-0763>

ABSTRACT

Percutaneous coronary intervention (PCI) is a common procedure following an acute myocardial infarction. Periprocedural stroke is a rare but life-threatening complication. Among these hand knob area infarctions are rarely encountered. Interestingly, the clinical presentation of these patients mimic a peripheral nerve injury making it a diagnostic challenge. We report a 57-year-old gentleman who noticed finger drop with hand muscle weakness of the right upper limb immediately following PCI which was carried out via a radial arterial puncture. Brain imaging revealed an infarction involving the hand knob area and he was treated with antiplatelets, statins and physiotherapy. This case highlights the importance of having a high degree of suspicion for the diagnosis of a hand knob area infarction when a patient present with a clinical presentation suggestive of a radial nerve palsy.

Keywords: *hand knob area, primary PCI, pseudoradial palsy*

INTRODUCTION

Primary percutaneous coronary intervention (PPCI) is the standard of care in an acute myocardial infarction. As it is a procedure which patients frequently undergo, it is important to gather information on its complications. Periprocedural stroke is a rare but life-threatening complication of PPCI (1). Among strokes, hand knob area infarction (HKA) is a rare type of ischemic stroke characterized by weakness of muscles involving movements of the hand, often misdiagnosed as a peripheral nerve disorder. These are strategically placed infarction in the

hand motor cortex (HMC) resulting in distal upper limb weakness. This is the first reported case in medical literature of a HKA as a periprocedural stroke following PPCI.

CASE REPORT

A 57-year old right-handed gentleman was referred from the coronary care unit with a weakness of the distal part of his right upper limb. He had undergone a PPCI for an antero-septal ST-elevation myocardial infarction via a puncture of the right radial artery, and had noticed the



weakness immediately following the procedure. On examination, he had restricted extension of the 3rd, 4th and 5th fingers with weakness of small muscles of the right hand (figure 1). There was no objective sensory impairment, and the reflexes were normal.



Figure 1: Finger drop of right lateral three digits

The initial referral was with regard to the possibility of it being a peripheral nerve injury. The cardiology team was concerned whether these symptoms and signs could be explained by an injury secondary to the radial puncture. However, a peripheral nerve injury could not explain the “differential finger drop” with a lack of sensory impairment.

Non-contrast computerized tomography (NCCT) of the brain revealed a circumscribed hypodensity involving the precentral gyrus of the left cerebral hemisphere. This was suggestive of an infarction of the hand knob area (figure 2). Normal nerve conduction studies ruled out a peripheral nerve injury. He was prescribed antiplatelets and statins. Occupational therapy and physiotherapy was arranged to help regain his functional status of the hand.

DISCUSSION

Hand knob area infarctions account for less than 1% of all ischaemic strokes (2). The “hand knob” is an omega/epsilon-shaped area within the precentral gyrus, which is crucial in controlling fine motor movements of the hand (3). An Infarction or a lesion involving this area could lead to significant functional impairment resulting in grave

morbidity. Infarctions involving the hand knob area, often present as pseudoperipheral palsies which makes it a diagnostic challenge to the clinician (4).

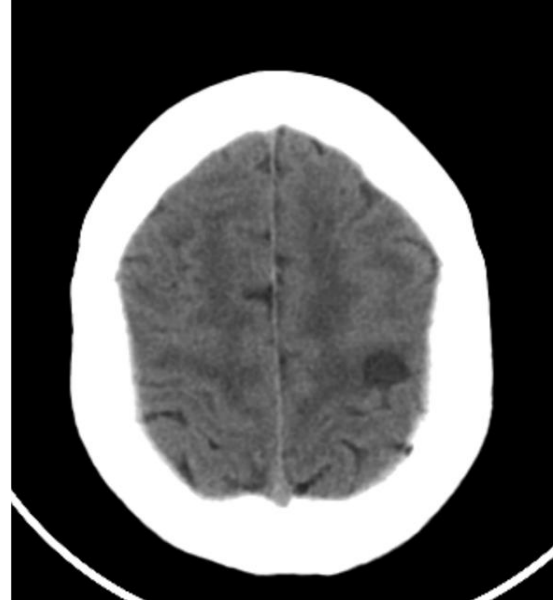


Figure 2: NCCT brain revealing the hand knob area infarction

In 1997 Yousry et al. were the first to report a patient presenting with upper limb weakness who was found to have an infarction involving the “hand knob area” (5). Following this, even though many cases were reported in the world, there were no cases reported from Sri Lanka and only one patient was reported from India (4). These cases had varying clinical presentations mimicking ulnar, median and radial nerve palsies.

In 2011 Manjaly et al. reported a patient with an infarction in the hand knob area presenting with clinical picture suggestive of a median nerve palsy (6). In 2012, Ueno et al. reported a patient presenting with a lesion suggestive of an ulnar nerve injury following a HKAI (7). However, there are no reported cases of HKAI presenting as a radial nerve palsy. This makes our patient unique, as he had extensor weakness of the medial three fingers mimicking a partial damage to the radial nerve.

Periprocedural stroke after percutaneous coronary intervention (PCI) is also quite rare and is often associated with serious morbidity. There are studies which have shown that the use of

transradial intervention during PCI reduces the risk of periprocedural stroke (1). However, our patient who underwent PCI via transradial intervention, ended up with an infarction involving the left hand knob area.

This case illustrates the significance of having a high degree of suspicion of an ischaemic stroke when there is monoparesis following PCI. It is also important to consider pseudoperipheral palsies as atypical presentations of ischaemic stroke. This will mitigate unnecessary investigations carried out to diagnose the cause of these complex clinical presentations.

Author declaration

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Authors' contributions:

Patient Management: N.T.W., R.C.P. and U.G.C.K.
Drafting of the manuscript: N.T.W.; Study supervision: P.J.P.P. and H.L.H.

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