

## Case Report

# Cryptogenic Stroke and Migraine: A Unique Case of Migrainous Infarct in a Young Male

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## Abstract

A 37-year-old male patient presented with a 3-day history of headaches followed by an episode of confusion slurring of speech and some self-resolving weakness of right arm. A CT head demonstrated a wedge-shaped infarct in left parieto-occipital region. Extensive workup to find out any cause of this infarct was unsuccessful. A neurological assessment was carried out which confirmed the likely possibility of migrainous infarct. The unique feature about the case is the absence of migrainous aura and male sex both of which are rare findings in migrainous infarcts.

**Keywords:** Headache; Migraine; Infarct

## Case Presentation

This very interesting case is of a 27-year-old male farmer who presented with 3 days of headaches in the occipital region which were constant in nature. The patient presented to the emergency department of University Hospital Limerick Ireland.

The headaches were followed by an episode of confusion and slurring of speech as well as right arm weakness which lasted for 5 minutes. This weakness was noted when he was driving his tractor. There was no history of vomiting or loss of consciousness and at the time of presentation to the hospital he was fully alert and asymptomatic and the headaches had improved. His vital signs and physical examination was unremarkable including a normal neurological examination.

The patient denied any co-existing medical conditions and use of medications or recreational drugs including alcohol or cigarettes. He was perfectly independent and living a married happy life.

The initial suspicion was that of a transient ischaemic attack even though this patient did not have any risk factors and an urgent non contrast CT scan of brain was performed which showed a wedge-shaped infarct in left parieto-occipital region with no evidence of haemorrhage (Tables 1-4).

This was followed by a full set of investigations including baseline blood parameters, secondary risk factors for stroke including HbA1C and lipid profile, thrombophilia screen, urine toxicology screen, immunology panel to look for any cryptogenic cause of stroke and

a transthoracic echocardiogram to find an embolic source. Holter monitoring to check for atrial fibrillation was also performed which only found sinus rhythm. This was followed by an MRI scan of the brain as well as an MR arteriogram which did not show any abnormality in carotid arteries and healthy cerebral venous sinuses. In the absence of a precipitant factor for his infarct the case was discussed with neurology colleagues who after detailed consideration suggested the most likely diagnosis of migrainous infarction. This was based on the history of constant headaches for 3 days before the start of symptoms with full negative stroke workup. This diagnosis was further supported by the patient's young age and lack of co-existing medical conditions. The patient was subsequently discharged with a plan to follow up with neurology in the outpatient.

**Table 1:** Thrombophilia screen.

Parameter	Normal range	Result
Cardiolipin IgG	-	Negative
Anti-Beta 2 GP IgG	-	Negative
Lupus anticoagulant	-	negative
Protein C	70-130 U/dl	157 U/dl
Protein S	65-140 U/dl	145 U/dl
Anti-Thrombin III	/	137 U/dl
Activated Protein C resistance	120-300 sec	130.2 sec
Beta 2 microglobulin	1.19-2.42 mg/L	1.74 ml/L

**Table 2:** Baseline laboratory parameters.

Parameter	Normal range	Result
Haemoglobin	13-17.5 g/dl	16.1
White blood cells	3.7-11.1 × 10 <sup>9</sup> /l	13.51
Platelets	140-400 × 10 <sup>9</sup> /l	283
Prothrombin Time (PT)	12.5 -15.5 sec	12.7
INR		0.9
APTT	28-40	31
Fibrinogen	2.0-4.0 g/l	3.9
ESR	-	6 mm/h
HBA1C	48 mmol/mol	31
Cholesterol	3.5-5.2 mmol/l	6.2
LDL-Cholesterol	1-2.6 mmol/l	4.9
HDL-Cholesterol	0.2-1.6 mmol/l	0.9
Triglyceride	0.3-1.7 mmol/l	1.3
Blood alcohol	0-10 mg/dl	<10

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**Table 3:** Urine toxicology.

Urine Toxicology	Normal range	Result
Amphetamines	Nil	Negative
Barbiturates	Nil	Negative
Benzodiazepines	Nil	Negative
Cannabinoid	Nil	Negative
Cocaine metabolites	Nil	Negative
Methadone	Nil	Negative
Opiates	Nil	Negative

**Table 4:** Infection screen and immunology.

Parameters	Results
Anti-nuclear antibody	Negative
Antinuclear cytoplasmic antibody	Negative
HIV 1+2 Antigen/Antibody	Negative
Syphilis Antibody	Negative

## Discussion

According to the international classification of headache disorders-3<sup>rd</sup> edition (ICHD-3), migrainous infarction has been given a set criterion1 and is defined as:

- A migraine attack fulfilling criteria B and C
- Occurring in a patient with migraine with aura and typical of previous attacks except that one or more aura symptoms persists for >60 minutes
- Neuroimaging demonstrates ischemic infarction in a relevant area
- Not better accounted for by another diagnosis

This definition has gained some criticism as it does not account for migraine episodes that happen without aura. In a study of 30 patients with migrainous infarction 20% were found to be those without aura and yet they had an infarct in the brain [1,2].

Typically, the auras in migraine are manifested only in 20 percent of cases and are of visual in nature lasting less than 60 minutes. However as per the ICHD-3 definition if the aura is longer, the likelihood of stroke increases.

Most of the studies in literature with migrainous infarction describe young women where the incidence increases with smoking and use of estrogen containing contraception [3].

In a French study of more than two thousand stroke patients the annual incidence of migrainous infarction was found to be 0.8 per 100,000 per year [4]. The unique feature about this case is that the absence of aura and male sex unlike the healthy females reported in literature. There are different mechanisms proposed for stroke in migraine and the most famous is vasospasm theory of cerebral blood vessels mostly in the posterior circulation [5].

## Conclusion

Migraine with or without aura can be considered as a risk factor for stroke specially in young population in the absence of other risk factors. Management should include advice on smoking cessation and avoidance of estrogen containing contraception.

## Disclosures

No financial disclosures or conflict of interests.

## Consent

Informed consent was obtained from the patient.

## Imaging Results

### Transthoracic echo

Normal study with good EF and functioning valves, bubble study negative.

### CT Head non contrast

Wedge shaped low attenuation cortical infarct in left parieto-occipital region. No acute haemorrhage.

### MRI Head including MR arteriogram (MRA)

Multiple small left sided hemispheric infarcts in posterior parietal region and left posterior centrum semiovale. Both internal carotid arteries are patent on MRA, central venous structures are normal.

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