

ISCHEMIC STROKE IN CANNABIS ADDICTED YOUNG PATIENTS: REPORT OF 3 CASES

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BACKGROUND

The illicit drugs more commonly associated with stroke are psychomotor stimulants like amphetamine and cocaine. Less often implicated are opioids and psychomimetics drugs including cannabis that is the most commonly consumed illicit drug around the world. A recent review reports cardiovascular complications related to cannabis abuse and another review (1) describes 64 patients, in which a causal link of cannabis consumption to cerebrovascular events is hypothesized.

CASES REPORT

We describe a little series of three patients admitted to our Stroke Unit because of an acute ischemic stroke. These three patients were male, aged 35, 41 and 45 -years respectively.

- None of these patients had a prothrombotic state or cardiac source of embolism or other vascular risk factor.
- All exhibited a temporal relation of symptoms onset to cannabis exposure. They have smoked cannabis consistently during the last two years before developing stroke. Urine samples were screened for cannabinoids resulting positive.
- Neuroimaging studies of the brain revealed, in all patients, an acute infarction in the middle cerebral artery territory.

One of these patients was treated by i.v. thrombolysis with r-tPA, the other ones with conventional medical therapy.

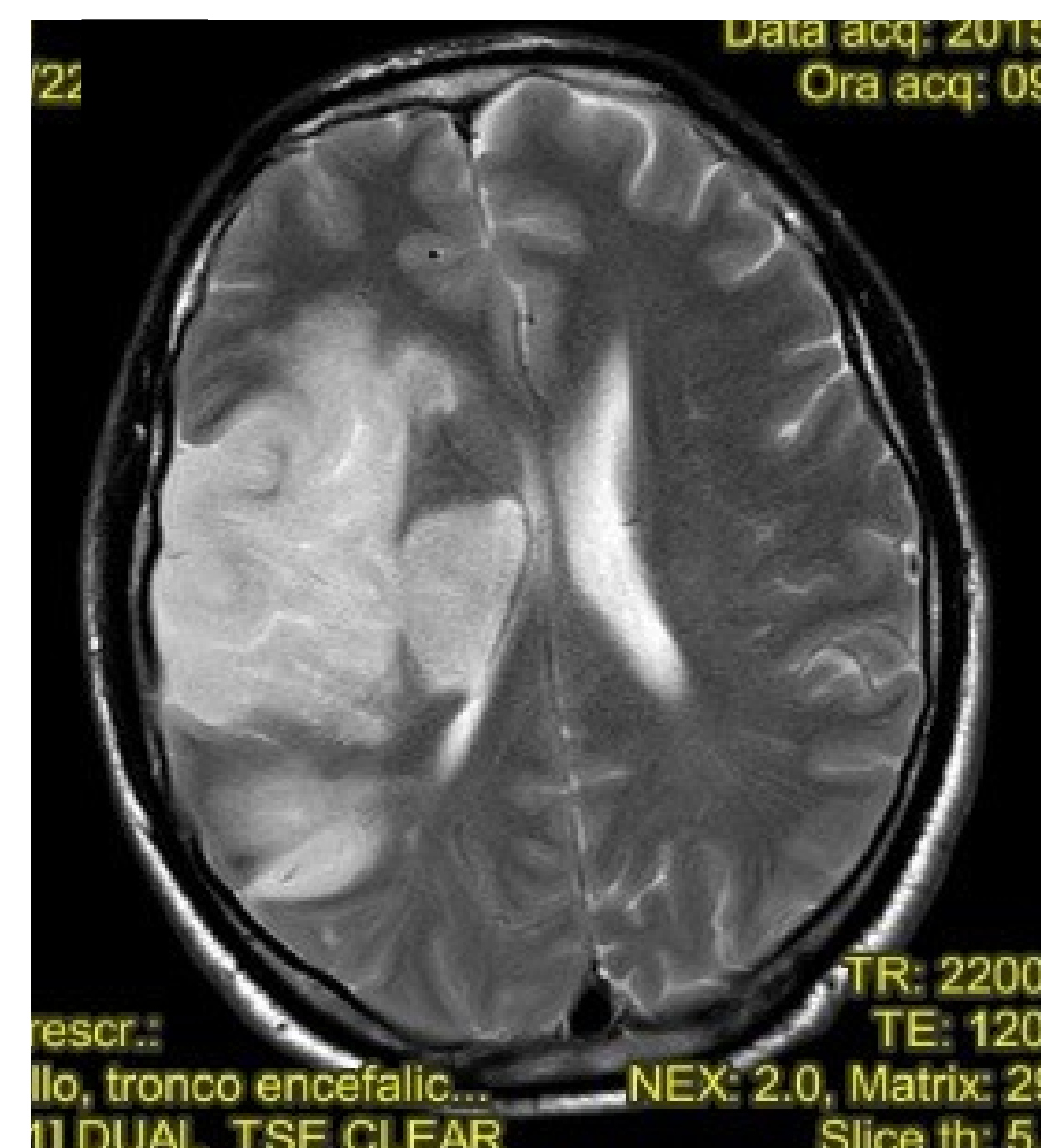


FIGURE 1:
G.G. 45 years old. Ischemic area in MRI scan FLAIR at 48 h.

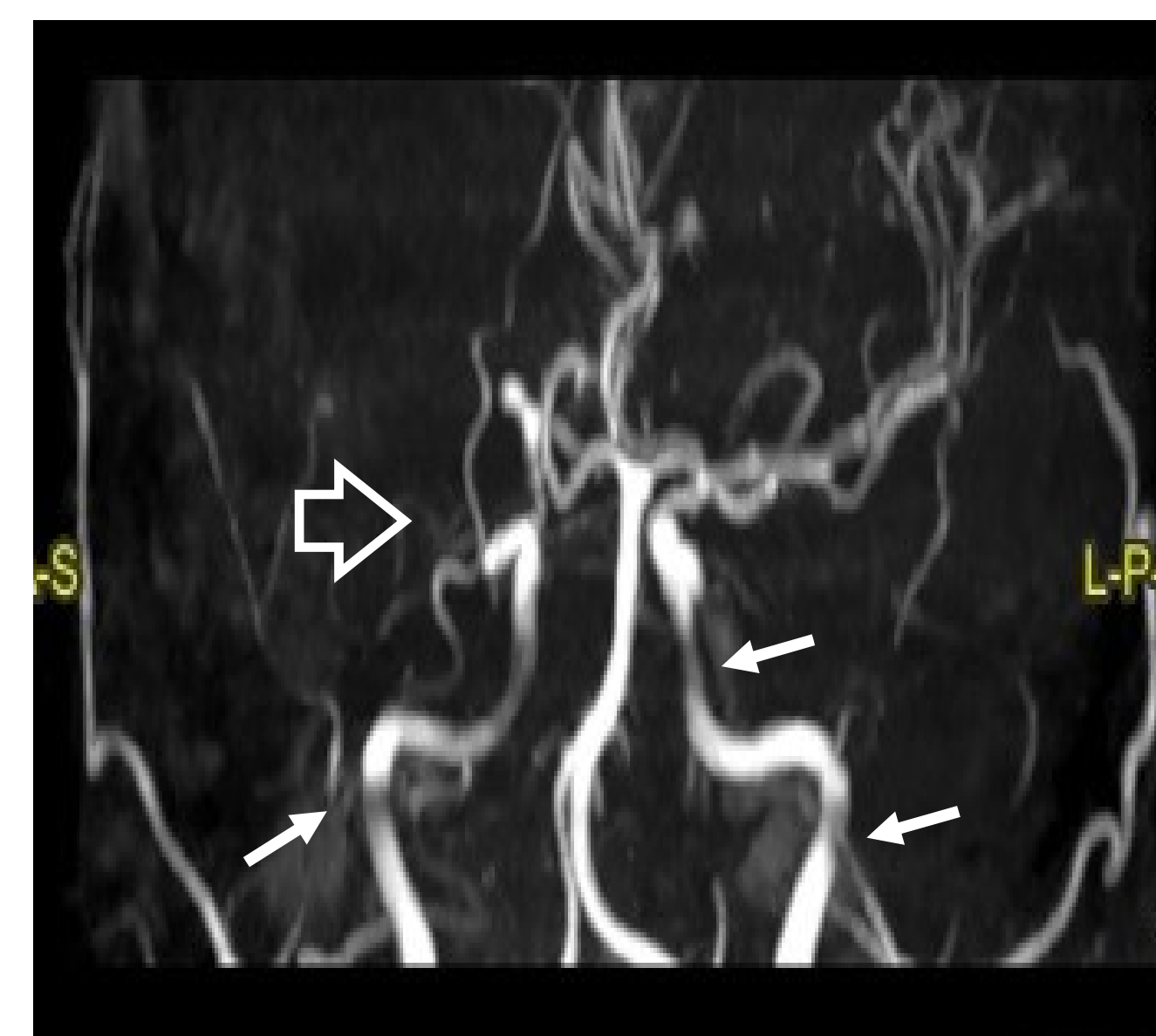


FIGURE 2:
The same patient: angio-MRI scan with MCA stop (open arrow) and focal stenosis in cerebral vessels (white arrows).

FIGURE 3:
 Δ -9-Tetrahydrocannabinol (THC) and Cannabidiol (CBD) structure.

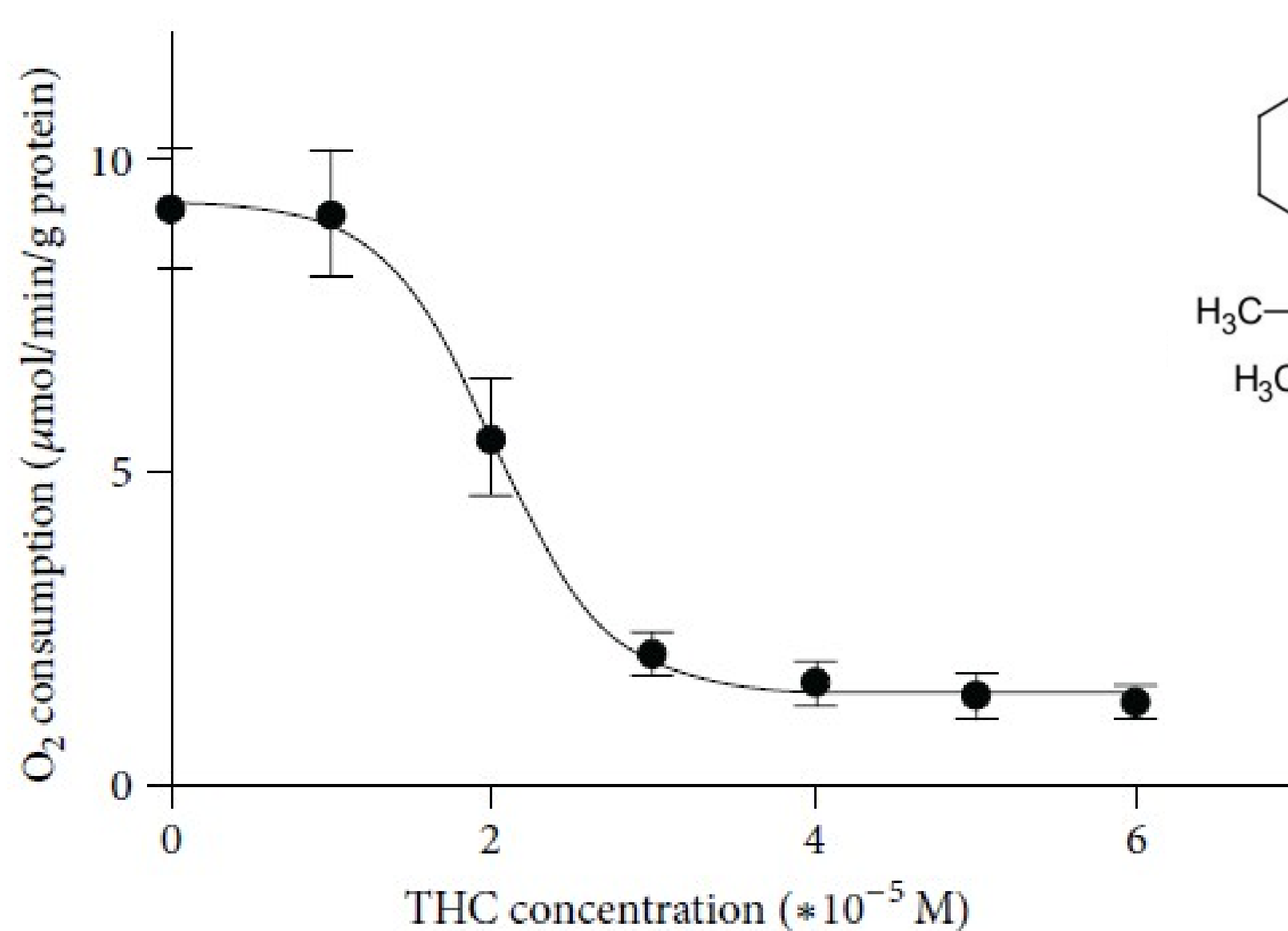
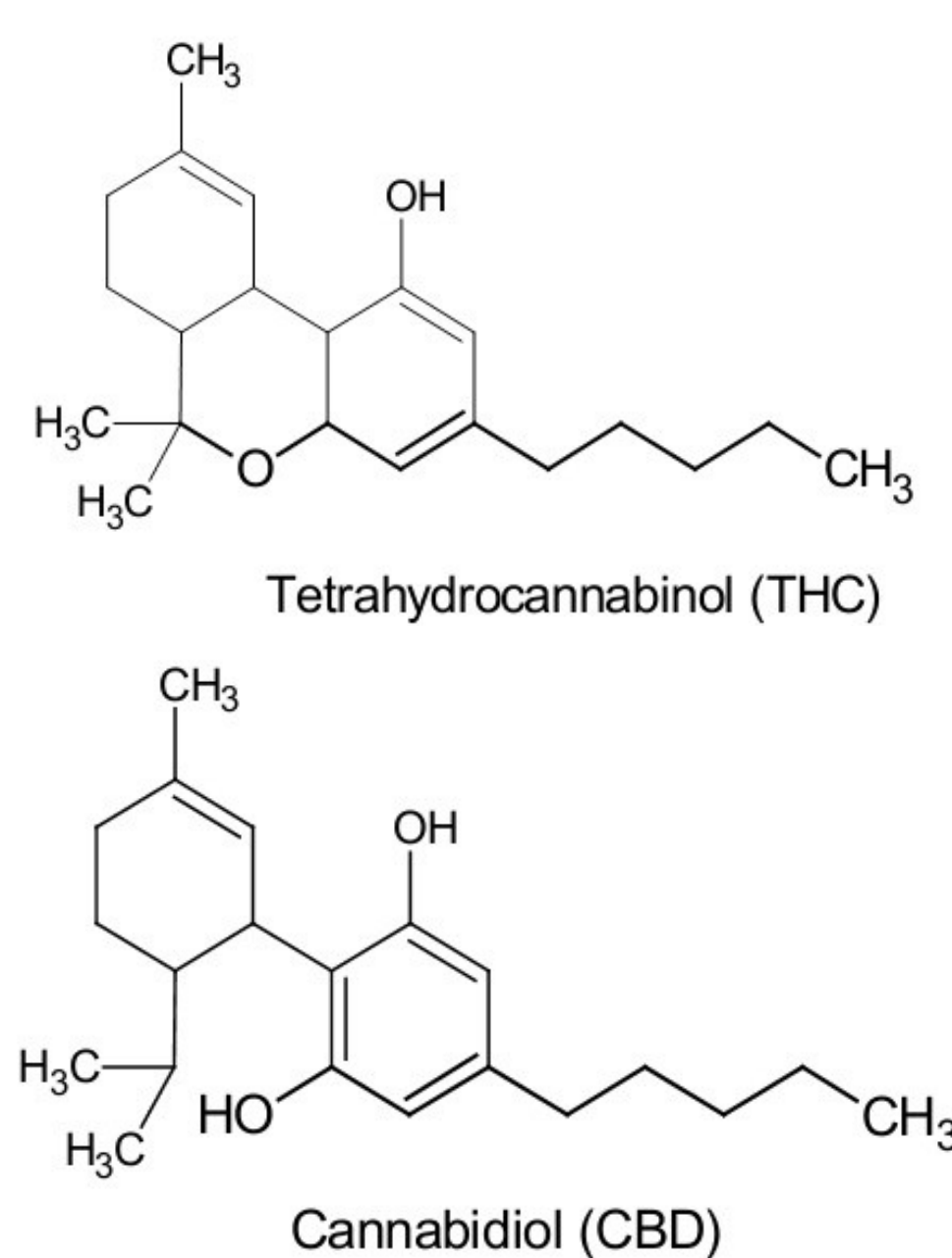


FIGURE 4: THC decreased brain mitochondrial maximal oxidative capacity: dose response curve. Effects of ranges concentrations of THC on brain mitochondrial maximal oxygen consumption, measured using glutamate and malate as substrates. Values are expressed in μmol/min/g protein.

CONCLUSION

The cannabinoids (synthetic cannabinoid or medical marijuana) could have some positive effects but drug abuse can be a cause of stroke in young adults.

The stroke mechanisms hypothesized in these young patients were:
 -an intracranial stenosis (2);
 -a reversible vasoconstriction;
 -a cannabis-induced vasculopathy;
 -a potential brain mitochondrial respiratory chain dysfunction with an increase oxidative stress (figure 4).

REFERENCES

1. Stroke. 2015 Mar;46(3):852-6. [Cannabis and stroke: systematic appraisal of case reports.](#) Hackam DG.
2. Cerebrovasc Dis. 2014 Jul 23;37(6):438-43. [High frequency of intracranial arterial stenosis and cannabis use in ischaemic stroke in the young.](#) Wolff V, Armspach JP, Beaujeux R, Manisor M, Rouyer O, Lauer V, Meyer N, Marescaux C, Geny B