

# **Stroke: Right Distal M1 Occlusion**



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## **Patient history**

An 84-year-old woman who woke up with left sided weakness. The last well known time was 21:00 the night before. The admission NIHSS was 7.

## **CT Protocol & First findings**

The clinical protocol included a non-contrastenhanced head CT (NCCT), CT angiography (CTA) and CT perfusion (CTP) sequences. The ASPECT score was 10 (Figure 1), CTA showed a right distal M1 occlusion (Figure 2).

## **Post-processing & Analysis**

Perfusion processing was performed using oSVD deconvolution method. Ischemic core and penumbra volumes were calculated based on specific thresholds proposed in Olea Sphere<sup>®</sup> software (Olea Medical<sup>®</sup>, La Ciotat, France) with the full automatic mode.

Using the combination of relative cerebral blood flow (rCBF) < 40% & absolute Time-to-maximum (Tmax) > 2s, no ischemic core was discerned. However, a large volume (91 ml) of critical hypoperfusion (penumbra) was revealed using absolute Tmax > 6s (Figure 3).



Figure 1 NCCT images



Figure 2 CTA images – right distal M1 occlusion

#### Discussion

This patient had large arterial occlusion (M1), a large penumbra (91 ml) and no established ischemic core. Based on this imaging profile, decision was made to proceed with mechanical thrombectomy using stent retriever resulting in successful recanalization with final TICI 3.

Follow up MRI on the next day showed a very minimal volume (1 ml) of infarction on Diffusion-weighted imaging images (Figure 4).

#### Glossary

**NIHSS:** National Institute of Health Stroke Scale **ASPECTS:** Alberta Stroke Program Early CT Score **oSVD:** oscillation Single Value Decomposition **TICI:** thrombolysis in cerebral infarction



Figure 3 CT Stroke report provided automatically from CTP data by Olea Sphere<sup>®</sup> – no ischemic core but large penumbra



Figure 4 Follow-up diffusion MRI (B1000) – minimal ischemia is noted

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