

# Third nerve palsy

The Eye News team would like to thank Erika Damato for her excellent work as Top Tips section editor and welcome Ali Yagan to the role. In his first contribution to the section, Ali shares his tips in the diagnosis of third nerve palsy.

## Case scenarios

1. A 71-year-old female presented to a nearby eye emergency unit with two days history of partial ptosis in her left eye with diplopia. She saw her GP earlier that day and he asked her to go to the emergency clinic with a potential diagnosis of left III cranial nerve palsy. Her medical history includes chronic obstructive pulmonary disease (COPD) which makes her wheezy and she needs a walking aid to move around. The colleague who saw her locally noted her left partial ptosis, limited elevation, limited adduction and requested blood tests (FBC, ESR, CRP), when these were noted as normal he diagnosed her microvascular left III nerve palsy. He discharged her from the unit with a follow-up appointment in two weeks' time. The next day her ptosis got worse and her son took her to the GP again who sent her to the neurosciences regional centre. She complained of a headache and there was a question whether she had a subarachnoid bleed. She underwent urgent CT angiogram, found an aneurysm, had it coiled then sent to our neuro-ophthalmology unit for orthoptic assessment and management of her residual left III cranial nerve palsy.
2. A 62-year-old female noted partial ptosis and diplopia. She went to see her local optician as she was worried that she had developed a stroke. He noted right upper lid ptosis, mild limited adduction and elevation. She was asked to go to her local A&E where she was seen, had a plain CT head and told that she does not have a stroke and discharged back to her GP. Her GP, concerned that she was under-investigated, referred her to our neuro-ophthalmology unit citing right ptosis, diplopia, limited elevation and adduction (hinting a right III palsy). She was seen urgently with an orthoptic assessment. It was noted that she is likely to have myasthenia gravis rather than nerve palsy and underwent further testing to confirm her diagnosis.

## Discussion

The traditional teaching on III palsy categorises medical and surgical III palsy

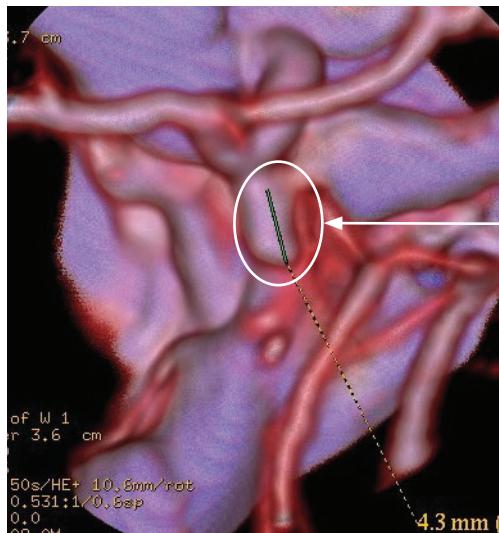


Figure 1: 4.3mm wide neck aneurysm in the posterior communicating artery compressing left III cranial nerve.

depending on pupil involvement and patient medical history. However, the pupil rule is only 90% true, so 10% of aneurysms can cause a 'medical III palsy' not involving the pupil. The current advice from leading neuro-ophthalmology experts is to investigate all III palsies thoroughly with a CT angiogram or MRA to rule out aneurysms before suggesting it is medical rather than surgical. In our department we scan all suspected III palsy patients using CT angio on the day. If there is an aneurysm the patient is referred to the neurovascular team, if normal then MRI head and orbit is requested. The first case was found to have an aneurysm that needed coiling. During her visit to her local eye clinic, there was no comment from the senior colleague on her pupil status and she did not have any neuroimaging, yet she was diagnosed with 'microvascular III palsy'. That diagnosis should only be given following ruling out all other possible causes of III cranial nerve palsy. In the second case, the patient's GP was concerned about a possible III cranial nerve palsy, yet her local A&E only performed a plain CT head scan and told her that she does not have a stroke. Her orthoptic assessment in our unit suggested myasthenia gravis, which can mimic cranial nerve palsies. This new information helped directing investigations and made a CT angiogram less important in that clinical setting.

## Further reading:

1. Pane A, Miller NR, Burdon M: *The Neuro-ophthalmology Survival Guide*. Amsterdam, Netherlands: Elsevier; 2007.
2. Vaphiades MS, Roberson GH. Imaging of oculomotor (third) cranial nerve palsy. *Neuro Clin* 2017;35(1):101-13.

## TAKE HOME MESSAGE

1. Investigate all III cranial nerve palsies with CT angiogram or MRA to rule out aneurysms.
2. Get a formal orthoptic assessment to help direct your investigations.
3. Myasthenia gravis is a great mimicker of cranial nerve palsy and can cause any pattern.

## SECTION EDITOR



**Ali Yagan,**

Consultant Ophthalmic Surgeon, Neuro-Ophthalmology and Adult Strabismus Fellowship, Manchester Royal Eye Hospital, Manchester, UK.

E: [Ali.Yagan@cmft.nhs.uk](mailto:Ali.Yagan@cmft.nhs.uk)