

# Metastatic Breast Cancer mimicking Ocular Myasthenia Gravis

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## Introduction

Myasthenia Gravis (MG) often mimics a cranial nerve palsy or ocular myopathy and localised myasthenia gravis involving the upper eyelid is frequently observed in the Southeast Asia [1]. In a recent survey (unpublished) of one hundred and sixty cases seen in one of our consultant's neuro-ophthalmology clinic in the Singapore National Eye Centre, there were sixteen (10%) ocular myasthenia gravis cases seen.

This report describes a patient who presented with unilateral ptosis but when she did not respond to a diagnostic trial of pyridostigmine bromide (Mestinon), further investigation revealed a metastasis from breast cancer in the posterior orbital levator palpebrae superioris muscle accounting for the ptosis.

## Methods: Case Report

A 60 year old Chinese female having been diagnosed with infiltrative ductal carcinoma of the left breast in 1999, developed metastases to the bone in 2006 and was on long term chemotherapy. She was assessed

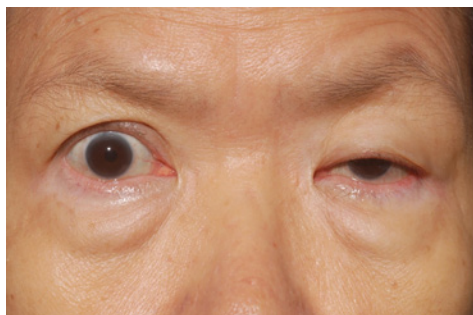
by our oncologists as stable and fit for cataract operation while on chemotherapy, first to an uneventful left cataract operation in 2007, and then a right cataract operation in 2010. Post operation her best corrected visual acuity was 6/6 in both eyes.

During her review one month following the second cataract operation she complained about left painless ptosis of two weeks duration. Comparison with a photograph from 2009 confirmed its recent onset, and she was referred to our neuro-ophthalmology clinic for further management.

On examination she had overaction of the left frontalis muscle with an elevated eyebrow and significant ptosis. The right lid crease was 2mm in height, absent on the left side and her palpebral apertures measured 9mm on the right and 3mm on the left (Figure 1). There was poor function of the left levator palpebrae superioris (LPS). Indeed, a marginal reflex distance (MRD1) being 4 mm on the right and minus 2 on the left was measured. Pupil reactions were normal with no RAPD. Extra ocular movements were full including left eye elevation and there was no diplopia elicited. Her ptosis was found to be fatigable with the presence of Cogan's lid twitch sign thus a diagnosis of ocular myasthenia gravis (OMG) was considered most likely. There were no clinical signs of generalized myasthenia. Thus the patient was prescribed a trial of oral Pyridostigmine (Mestinon) 60mg with oral Propantheline 15mg twice a day, pending single fiber electromyography (sfEMG), which is the most reliable detection method, being positive in >95% of cases of generalized MG. In OMG, the sensitivity of repetitive nerve stimulation is low but the sensitivity of sfEMG is high especially in the frontalis muscle [2].

When reviewed two weeks after starting medication, the patient did not show any improvement in the ptosis. However, she continued with the treatment. The Oncologist ordered brain Magnetic Resonance Imaging (MRI) to rule out intracranial secondaries. However she was found to have a 7mm by 4 mm nodule in the upper posterior orbital region involving the left levator palpebrae superioris and superior rectus muscle complex (Figure 2). The patient then had a repeat metastatic screen which showed interval increase in her vertebral metastases and a suspicious right lung nodule.

Biopsy of the posterior orbital lesion was not considered necessary or appropriate as the clinical and radiological diagnosis of a secondary deposit was indisputable. Furthermore this secondary deposit was apparently confined to the levator part of the levator/superior rectus



**Figure 1:** Photograph of face showing left ptosis associated with deep lid sulcus and frontalis overaction. There is contralateral lid retraction in the fellow eye.



**Figure 2:** Coronal section of T2 weighted image with contrast showing enhancing lesion in the left levator palpebrae superioris complex on MRI (arrowed).

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complex biopsy of which would be technically difficult, and not without danger of retro-orbital haemorrhage threatening the adjacent optic nerve.

The Pyridostigmine treatment was therefore discontinued and when reviewed six months later in the neuro-ophthalmology clinic as expected there was no improvement in her ptosis.

## Discussion

Breast cancer is one of the most common malignancy amongst women worldwide and in our local population in Singapore. The incidence of ocular and visual pathway involvement is reported to be as high as 30% in patients with known metastatic disease. Ocular metastases occur via the haematogenous route and predominantly involve the choroid but metastases to the orbit, and visual pathways have also been described [3].

Akda et al in a retrospective review of the radiologic features of 15 patients with orbital metastases originating from breast cancer reported lacrimal gland enlargement in 33%, episcleral space involvement in 33%, bone involvement in 13%, and globe dystopia in 53%. The extra ocular muscles were involved in 87% of their cases, with two or more muscles involved in 60% of patients. The medial and lateral recti muscles were affected in 53% and 47%, respectively, and the inferior and superior recti muscles in 33% [4].

Capone and Slamovits reported on five cases where pain, diplopia, and proptosis were the most common presenting manifestations of orbital metastases [5].

Our patient is of particular interest because she presented subacute ptosis as the first manifestation of an orbital metastasis. However her clinical evidence suggested a diagnosis of OMG although her ptosis did not improve on treatment. The diagnosis of OMG is based on history and clinical findings and is best confirmed by improvement of symptoms following intramuscular injection of prostigmine or after a trial of treatment with oral pyridostigmine bromide [1]. The other possible initial differential diagnosis was aponeurotic ptosis given her history of a recent cataract operation during which traction on the levator aponeurosis from the lid speculum could have occurred. Age related levator aponeurosis dehiscence had also to be taken into

account, however, the absence of a lid crease in this patient as well as old photographs showed that the ptosis was of recent onset.

In the anatomy of the so called orbital levator/superior rectus complex it should be noted that the two muscles are separate both at the orbital apex and in mid orbit [6]. A secondary deposit may involve only one of these as in the case reported above where the levator muscle alone must have been infiltrated because the superior rectus muscle movement was normal.

A possible explanation for the lid twitch we observed is that the patient was using her LPS and her frontalis muscle to elevate the lid, but this elevation force was counteracted by the mass effect of the secondary deposit hence the droop. In a similar manner, the increased mass of the muscle could also produce the fatigability observed because this enlarged muscle was unable to sustain contraction and hold the lid in up gaze.

In conclusion while mechanical causes of ptosis are uncommon and OMG very frequently seen, the attending Ophthalmologist should be vigilant in suspecting metastases causing a mechanical ptosis in patients with a background of cancer. Thus there should be a lower threshold for orbital neuroimaging in such patients when there is no response to standard treatment.

## References

1. Cullen JF (2009) Final observations of a European Neuro-ophthalmologist in Southeast Asia. *Asian J Ophthalmol* 11: 25-28.
2. Miller N R, Newman N J, Bioussé V, Kerrison JB (2005) *Calvert PC in Walsh and Hoyt's Clinical Neuro-Ophthalmology* 6<sup>th</sup> edition. Philadelphia, Lippincott Williams and Wilkins eds. Vol.1; 21: 1056-1057.
3. Wickremasinghe S, Dansingani KK, Tranos P, Liyanage S, Jones A, et al. (2007) Ocular presentations of breast cancer. *Acta Ophthalmol Scand* 85: 133-142.
4. Akda F, Hafezi F, Heule-Dieleman HA, van den Bosch WA, Luyten GP, et al. (2010) Orbital metastases of breast cancer. Radiologic features. *Ophthalmologie* 107: 728-732.
5. Capone A Jr, Slamovits TL (1990) Discrete metastasis of solid tumors to extra ocular muscles. *Arch Ophthalmol* 108: 237-243.
6. Duke Elder S, Wybar KC (1961) *System of Ophthalmology*. London. Kimpton Vol 2 Section 3; 5: 414-423.