

# Entomopia

## Case Report

A 39-year-old lady was seen in the neurology clinic with an eight-month history of episodes in which her vision became blurred, as if she were looking through a prism. She described the experience as "this is how a fly sees", meaning that she saw multiple copies of any object she looked at. Episodes lasted up to 25 minutes, during which she felt unwell and lay down, preferably in the dark, with a sharp pain in the left temporal region, although there was no nausea. Neurological examination was normal. A diagnosis of migraine with aura was made, the aura characterised by entomopia.



## Discussion

Entomopia, meaning literally 'insect eye', is the name which has been given to a form of polyopia in which a grid-like pattern of multiple copies of the same visual image is seen.<sup>1</sup>

Insects have compound eyes built up of simple elements called ommatidia ('small eyes'), first illustrated by Robert Hooke in his *Micrographia* of 1665 (see Figure). Each ommatidium has an outer lens which refracts light onto a photoreceptor element at its inner end, the retina. Information from all the ommatidia is integrated in the insect brain to assemble a 'mosaic' image, the resolution of which is determined by the divergence angle between ommatidia. The term 'compound' eye is recognised to be potentially misleading, since its function is like that of other eyes, and is not compound in the sense of representing an aggregate of eyes. Advantages of this type of compound eye include a wide visual field and ability to detect movement, but objects are in focus only at a certain distance from the eye.

Polyopia, defined as multiple copies of a visual percept, sometimes with visual field defect, is also reported in migraine, albeit rarely.<sup>2</sup> Polyopia has often been associated with palinopsia, the perseveration or the recurrent appearance of a visual image after the stimulus has disappeared (sometimes known as pseudodiplopia because patients

may complain of seeing two of things).<sup>3</sup> Visual alloaesthesia, the illusory transposition of an object seen in one visual field to the contralateral visual field, may be related. These visual phenomena may be associated with occipital or occipito-parietal lesions, both structural and functional, bilateral or confined to the nondominant hemisphere, but they have also been described with anterior pathway (retina, optic nerve) pathology and in the absence of cerebral disease.<sup>4,5</sup>

What cerebral mechanism(s) might account for the phenomena of entomopia, polyopia, palinopsia and visual alloaesthesia? Complex grid and lattice like hallucinations fall into that group associated with visual pathway, as opposed to brainstem/cholinergic hallucination syndromes.<sup>6</sup> A defect of visual integration and fixation, consequent upon occipital lobe disease or spreading depression, has been postulated,<sup>7</sup> or incomplete visual processing due to poor visuospatial localisation in a hemianopic field,<sup>8</sup> but ultimately the mechanism(s) remains unknown. Fortunately, reassurance may be the only treatment required, as in this case.

## References

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