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Letter to the Editor

# Complex visual illusions in a patient with pituitary apoplexy

To the Editor:

Pituitary apoplexy is a rare but lethal disorder caused by hemorrhage or infarction of the pituitary gland, usually within a pituitary adenoma. Clinical manifestations include headache, fever and visual disturbances. Signs that mimic meningitis are not unusual and make the diagnosis more difficult. Over two thirds of patients with pituitary apoplexy have visual disturbances [1]. These often present as visual field impairment or ocular palsy, and sometimes even blindness [2]. The presence of a visual disturbance is a warning sign that hemorrhage in a pituitary adenoma may have influenced the surrounding structures such as the optic chiasm or optic nerves.

Alice in Wonderland syndrome (AIWS), first described by Todd in 1955, is a cluster of symptoms that occur in patients with migraine or epilepsy. The symptoms include micropsia, macropsia, teleopsia (visual perception error, objects appear much further away than they actually are), lilliputianism (objects appear much smaller than they actually are), visual agnosia, akinetopsia and other strange visual experiences [3]. However, some experts suggested that narrower illusionary perceptions of the patient's own body were necessary criteria of AIWS [4]. We present a case with complex visual illusions mimicking AIWS as a result of pituitary apoplexy.

## 1. Case report

Mrs. H was a 64-year-old woman with no history of major medical illness, migraine or epilepsy. Five days before she came to our emergency department, she had a sudden onset of severe headache, nausea and frequent vomiting. On arrival, her temperature was mildly elevated (38.3°C), and high blood pressure was noted (systolic/diastolic: 193/93). Kernig's sign and Brudzinski neck sign were negative. She reported visual disturbances for 1 week. Initially, she felt that the margins of objects became distorted and that they got intermittently larger or smaller. While the emergency psychiatric consultant interviewed her, she reported that the examining psychiatrist "looks to be about 10 meters away, though I really know that the doctor is just at the bedside." Due to Mrs. H's unremitted and increasing intense headache and visual disturbance, the psychiatric consultant suggested a series of examinations including brain computed tomography. This revealed that the sella

turcica was enlarged by a nonhomogeneous snowman-like tumor. The brain magnetic resonance imaging suggested that the tumor might be a macroadenoma of the pituitary gland (Fig. 1). The patient also had a low cortisol level (1.34  $\mu$ g/dl in the morning). Due to emergent situation, a neurosurgeon used the endoscopic transnasal transsphenoidal approach to remove the tumor 2 days later. The histopathological report was adenoma with marked infarction. Mrs. H's headache and visual disturbances had all subsided before discharge. She has been followed in our outpatient department for more than 2 years without recurrence of any symptom.

#### 2. Discussion

The most common visual disturbances associated with pituitary apoplexy are visual field impairment and decreasing visual acuity. In this case, the visual disturbance presented as illusional experience with metamorphopsia, dysmegalopsia as macropsia, micropsia and teleopsia, mimicking acute AIWS. These symptoms disappeared after surgery, so we believe that her unusual visual experience was caused by the pituitary apoplexy.

Visual disturbances in AIWS can occur in patients with migraines, epilepsy, Epstein–Barr virus, varicella, coxsackie B1 virus, 2009 pandemic H1N1 influenza A viral infection and topiramate treatment in migraineurs [5–8]. Problems in the visual pathways result in the visual cortical misinterpretation of the visual signals [9]. A study in children showed decreased blood flow in visual and paravisual cortical regions in 99mTc-HmPAO Single Photon Emission Computed Tomography [10]. Another showed high-amplitude visual evoked potentials in P100-N45 areas of AIWS patients with infectious mononucleosis [11]. Vasodynamic changes in other areas of the brain may also induce AIWS. A growing pituitary adenoma may directly compress the surrounding optic tract and cause AIWS. In this patient, although we had no direct evidence, the vasodynamic changes might have caused AIWS-like visual illusions and her severe headache as well.

To the best of our knowledge, this is the first case report of AIWS-like visual illusion caused by pituitary apoplexy. We suspect, however, that this phenomenon is not so rare in patients with pituitary apoplexy or pituitary adenoma. Patients hardly dare to report such strange perceptions to their treating physician as they are often afraid to be misjudged as "somatoform" patients, and some reported symptoms by the patient may lack a precise description. Such a special visual illusion may present in patients with nonfetal migraine and seizure, as well with pituitary apoplexy, a potential lethal medical emergency. We report this case to remind clinicians not to neglect AIWS-like visual illusions and to perform a complete examination including brain imaging.

 $<sup>^{\</sup>dot{\gamma}}$  Authors' contributions: Han-Wei Chou and Nian-Sheng Tzeng are psychiatric consultants who followed the case for 2 years. Han-Wei Chou collected the data and wrote the article under Nian-Sheng Tzeng's guidance. Hsin-An Chang and San-Yuan Huang provided clinical and writing advice.

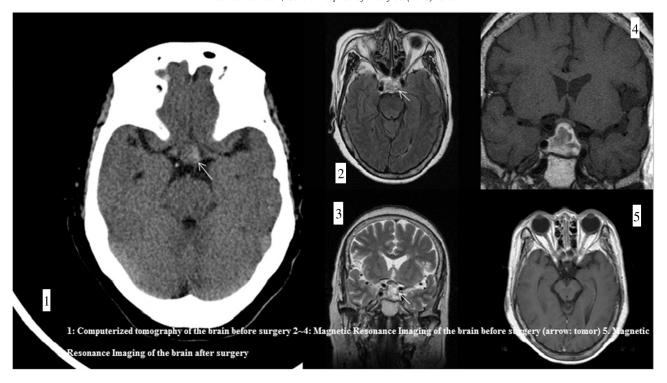


Fig. 1. (1) Computerized tomography of the brain before the surgery. (2–4) Magnetic resonance imaging of the brain before surgery (arrow: tumor). (5) Magnetic resonance imaging of the brain after surgery.

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