

Case report



## CORTICAL BLINDNESS DUE TO BILATERAL STROKES – A CASE REPORT OF ANTON SYNDROME

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### ABSTRACT

**Background:** Blindness (anopia) is a functional loss of vision, which could be due either to ophthalmological or neurological conditions. Blindness may be congenital or acquired. The main causes of blindness in adults are cataracts, uncorrected ametropia (myopia, astigmatism), glaucoma, macular dystrophy, cortical ischemic strokes, etc. In less than 10% of the patients, the reason for cortical blindness is bilateral occipital strokes, one of them hemorrhagic.

**Case Description:** In the current case report, we present a 75-year-old patient with complaints of headache and visual loss. The patient has a history of a left PCA (posterior cerebral artery) distal ischemic stroke. The CT scan reveals a hypodense cerebral lesion in the left medial occipital cortex and subcortex (lingual gyri and cuneus) and a hyperdense cerebral lesion in the right medial occipital cortex and subcortex (lingual gyri and cuneus). The neurological examination shows only bilateral visual loss without motor deficits. The patient has visual anosognosia and confabulation in the setting of obvious visual loss and cortical blindness (Anton-Babinski syndrome, also known as ABS or Anton syndrome). However, performing cerebellar tests (dysdiadochokinesis, finger-to-nose test, heel-to-shin test, cerebellar ataxia) was not done because of the visual loss. After being consulted by a neurologist and neurosurgeon with the preliminary diagnosis of brain hemorrhage, the patient was admitted to the Neurology Clinic of UMHAT D-r “Georgi Stranski”, Pleven, Bulgaria.

**Conclusion:** Occipital infarction must be considered in all cases with sudden onset of isolated visual loss. Early diagnosis and treatment of stroke reduce mortality and morbidity. The prognosis depends on the extension of the visual cortex damage.

**Keywords:** cerebral hemorrhagic stroke, ischemic stroke, cortical blindness, bilateral stroke,

### BACKGROUND:

Blindness (anopia) is a functional loss of vision due either to ophthalmological or neurological conditions. Blindness may be congenital or acquired. The main causes of visual loss in adults are cataracts, myopia, astigmatism, glaucoma, macular dystrophy, cortical ischemic strokes, etc. Less than 10% of the cases with cortical blindness are caused by bilateral occipital strokes, one of them hemorrhagic [1]. In the current case report, we present cortical blindness due to bilateral strokes – ischemic and hemorrhagic.

### CASE DESCRIPTION:

A 75 years man with a sudden onset of headache and visual loss was admitted to the Neurology Clinic, UMHAT “D-r Georgi Stranski”. He had a history of left PCA distal ischemic stroke. The neurological examination showed bilaterally isochoric pupils and normal light reflex but complete visual loss. The other cranial nerves were intact. No motor deficit was found. Cerebellar testing was not performed because of the complete visual loss. The fundoscopy was normal. The patient had visual anosognosia and confabulation in the setting of obvious visual loss and cortical blindness defined as Anton-Babinski syndrome, also known as ABS or Anton syndrome [2,3]. A native CT scan revealed a hypodense cerebral lesion in the left medial occipital cortex and subcortex (lingual gyri and cuneus) and a hyperdense cerebral lesion located in the right medial occipital cortex and subcortex (lingual gyri and cuneus).

**Image 1.** A native CT image of bilateral cerebral PCA strokes. Note the hyper and hypodense lesions bilaterally.



The patient was consulted by a neurologist and neurosurgeon with the preliminary diagnosis of hemorrhagic stroke, and was admitted to the Neurology Clinic, UMHAT D-r “Georgi Stranski” Pleven, Bulgaria. After 4 days of conservative and supportive treatment, the patient was discharged without significant improvement. The patient was assigned for visual training and rehabilitation.

### DISCUSSION:

Bilateral occipital strokes are rare conditions. Less than 10% of the cases with cortical blindness are due to bilateral occipital strokes, one of them hemorrhagic. Specific treatment strategies are recommended depending on the volume, localization, and type of stroke [1].

Stroke incidence increases with age [4, 5]. The chance of having a stroke doubles every 10 years after age 55. A median age of  $70 \pm 11$  years [4] and  $65.3 \pm 8.2$  years [5] was mentioned to be uncontrollable risk factor for stroke. Our case was 75 years old male, which is consistent with the literary data.

Cortical blindness must be considered in all cases with partial or complete loss of vision, normal eyes and pupil reactions to light [6]. Similar findings were found in our patient, defined as Anton syndrome (patients may not be aware of blindness, while in a partial lesion, vision may fluctuate). Geddes et al. [7] have published that the rate of bilateral visual field defects associated with stroke is 0.5-0.7%. In another study [8] carried out with 474 patients with stroke (402 with ischemic and 72 with hemorrhagic stroke) fol-

lowed up for 9 years, it was found that weakness (80%), hemianopia (14.6%), and diplopia (5.5%) were the most common complaints of the patients. Other possible causes of cerebral blindness different from occipital infarction are traumas of the occipital region, tumors (falco-tentorial), migraine, occipital seizures, invasive cardiac procedures, and preeclampsia [9].

Early diagnosis is vital for all types of strokes. In the emergency department, non-contrast brain CT must be the method of choice for patients' evaluation [10]. In our clinical case, a CT image of the hypodense area excluded acute ischemic stroke and the necessity of thrombolytic therapy. As the intracerebral hematoma volume was less than 30ml without large oedema, ventricular compression and midline shift, no surgical treatment was done.

However, patients with risk factors for stroke should be evaluated very precisely because early diagnosis guarantees a better outcome. What is more, early diagnosis and adequate treatment reduce mortality and morbidity. Occipital infarction should be considered in case of isolated visual loss [10].

The prognosis depends on the extension of the visual cortex damage. Transient ischemic attacks have a better prognosis than bilateral extensive occipital infarction. Sometimes, patients achieve visual improvement to some extent, but full recovery of vision never occurs [10, 11].

Such patients have worse quality of life. Family members may also be affected by the following inevitable socioeconomic impact. Such patients often suffer falls and bone fractures. An interdisciplinary therapeutic approach, including neurologists, ophthalmologists, neurosurgeons, anesthesiologists, physiotherapists, and stroke nurses, is the best option for them [11, 12, 13, 14, 15]. Many rehabilitation and stimulative (transcranial brain stimulation) approaches are still exploratory and require more research and time before being adopted [14, 15].

### CONCLUSION:

Occipital infarction must be considered in all cases with sudden onset of isolated visual loss. Early diagnosis and treatment of stroke reduce mortality and morbidity. The prognosis depends on the extension of the visual cortex damage.

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