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Letter to Editor

Blindsight as the Plausible Explanation for the Black/White Vision in Normal Pressure Hydrocephalus

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Letter to Editor

Dear Editor,

The cortical color processing system brain consists of several stages extending from V1 to V4, partly directly but mainly through V2 temporal cortex [1]. Normal pressure hydrocephalus is a neurological disease characterized by an expansion of the ventricles of the brain against the background of normal intracranial pressure values and manifested by a specific triad or symptoms including gait disturbance, cognitive disorders and dysuria [2]. In this study, we assessed the biological marker role of color vision directly, related with the compromise of the cortical pathway V1 and/or V4 causing a black/white vision or, in any way, an impair color vision by normal pressure hydrocephalus patients. 28 Calabrian male patients (age range 51-84 years; mean age 73.2 ±1.57 years) showing a mean disease duration of 4.4 ±0.91 years (range 1.0-23 years) were enrolled. 28 Calabrian males controls were matched for sex and age. An Ophthalmologist examined all patients and controls in order to rule out diabetic retinopathy, cataracts, senile maculopathy, or ocular fundus anomalies. Inherited red-green colorblind subjects were excluded, too. All patients and controls underwent the Nuclear Magnetic Resonance 3 TESLA to confirm their status and the following clinical tests: Ishihara test [3]; Farnsworth D-15 Test [4], The City University Test [5]. The results have obtained analyzing 28 Calabrian male patients (age range 51-84 years; mean age 73.2 ±1.57 years) showing a mean disease duration of 4.4 ± 0.91 years (range 1.0-23 years), admitted to the National Researches Council in Magna Graecia University, Catanzaro (Southern Italy). The patients were subdivided into three groups: 7/28 patients showed a black/white vision; these patients were subdivided into two subgroups: 4/7 patients without surgical ventricular-peritoneal shunt; 3/7 patients in presence of the surgical ventricular-peritoneal shunt. 1/3 patient in this last subgroup showed a normal color vision after surgical shunt, and 2/3 showed a black/white vision after surgery shunt, too. Moreover, 14/28 patients showed a color vision deficiency; these patients were subdivided into two subgroups; 7/14 without surgical ventricular-peritoneal shunt. 3/7 patients in this group showed the double red/green, and blue color vision deficiency, 2/7 patients showed the red/green color vision deficiency, and 2/7 patients showed the blue color vision deficiency. 7/14 patients have the surgical ventricular-peritoneal shunt. 4/7 patients in this group showed a restored normal color vision after the surgery shunt; 2/7 patients showed the red/green color vision deficiency, after the surgery, too; 1/7 patient showed the blue color vision deficiency after the surgery, too. 7/28 patients showed a normal color vision. All controls showed a normal color vision. In the patients showing the black/white vision, we find a compromise of the visual pathways from V1 to V4 in the middle brain. The very compromise of the primary visual area V1 does not allow that the visual stimulus can arrive to V4 area. In fact, the integrity of both above areas is critical to see, and be consciously aware of having seen the colors. The integrity is restored in the patient who have a new normal color vision after the surgical ventricular-peritoneal shunt. In patients showing the color vision deficiency both on

red/green, and/or on blue/yellow axis, there is no a compromise of V1 primary visive area, but only in V4 color vision area. Color vision can monitor the clinical status before and post the surgical ventricular-peritoneal shunt in normal pressure hydrocephalus.

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Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

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