TO SEE OR NOT TO SEE

ABOUT ANTON-BABINSKI SYNDROME AND BLINDSIGHT

Lessa Schippers[1]

[1]Master's student Cognitive Neuroscience, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands

Brief message

My name is Lessa Schippers, and I am a second year master's student Cognitive Neurosciences in the Plasticity and Memory track. I became an editorial editor at RAMS in October 2020, because I like writing and wanted to improve. I chose the topic for my brief message, because it was introduced to me during a neurophilosophy lecture on consciousness. The lecturer used the described disorders as an example that consciousness as a concept is not always as straightforward as we think it is. With my biomedical background, however, I was interested in the mechanisms. In this brief message, I tried to explore those mechanisms.

Would you rather be blind and be under the impression that you can see, or think you are blind, while you can actually see? The former is called Anton syndrome, and the latter blindsight. This brief message will discuss both of these rare conditions involving vision and vision loss.

Anton-Babinski syndrome is named after the neurologist Gabriel Anton, who defined the disease at the end of the 19th century; however, the syndrome was already described in 63 AD. by Seneca [1,2]. Patients with Anton syndrome suffer from cortical blindness due to damage in the occipital lobe. This syndrome is often caused by stroke but other causes can include head trauma or hypertensive encephalopathy [1]. Interestingly, these patients are unable to recognise the fact that they are visually impaired. In general, a condition related to the inability of recognising an impairment is called anosognosia, a term coined by François Babinski in 1914 [3]. In the case of Anton-Babinski syndrome, other brain areas besides the occipital lobe, such as speech-language areas, construct made-up images due to a disconnection between brain areas [3]. This construction of images is called confabulation [3]. Due to these images, the patient believes they are still able to see. For example, if you ask a patient with Anton-Babinski syndrome to comment on your outfit, and you wear a dress, they might respond, 'I really like your pants'. Confabulation can also occur in the case of deafness or amputations. Treatment consists of treating the origin of the occipital damage to the extent possible [1].

On the other hand, blindsight is a condition where patients think that they cannot see, although these patients should be able to see. Interestingly enough, unconsciously they do see. For instance, if you ask them to describe an object you are presenting to them, *e.g.*, a red mug, they will tell you that they are blind and cannot see the object. If you ask them to guess the object, they will most likely, unconsciously, guess right. Blindsight is caused by damage in the V1 area, the primary visual cortex, in the brain [4]. Patients with blindsight can still see because the V1 area is not the only area in the brain receiving input from the visual tract [4]. Some other areas receiving input from the visual tract are extrastriate visual areas, the inferotemporal cortex, and the amygdala [4]. In this way, patients unconsciously receive visual information, but they lack coordination by the V1-area to put the pieces together, creating the final image we consciously see. Treatment can consist of either interventions that try to recover vision or learning to use aids for people who are blind [5].

We presented two different syndromes here that can be seen as polar opposites regarding their symptomatology. Despite this remarkable disparity, the pathophysiology is curiously similar. It is only the location of the brain damage that decides which syndrome a patient will develop. This delicateness of the brain fascinates and drives neuroscientists every day.

References

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EXAM QUESTION

Question 5

Do you want to test your knowledge regarding this topic? Then, try to answer the exam question below.

Several distinct forms of blindness have a neurological origin. Which of the conditions described below is caused by compression of the optic chiasm by a pituitary gland tumour?

A. Complete loss of eyesight in the left OR right eye
B. Heteronymous bitemporal hemianopsia
C. Left OR right homonymous hemianopsia
D. Total loss of vision in BOTH eyes

The answer to this question can be found on page 33 in this journal.