



Agnosia in Canon: a Historical Issue

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Dear Editor-in-Chief

Agnosia is defined as a neurologic disorder through which the patient loses the ability to recognize persons, objects, shapes or sounds depending on the sense involved whereas the sense might not be defective and there might not be any memory loss (1). Chronologically, agnosia was first described by Carl Wernicke (1874) and Kussmaul (1877) who tried to respectively explain receptive aphasia and word deafness via agnosia (2). Searching the Cannon of Avicenna (3), the author found that the book has elaborately described this neurologic phenomenon. Describing disorders resulting from imagination damages, Avicenna classifies the disorders as failure, disability, deterioration and exuding the norms. He further defines failure as a perceived sense that disappears and a veil of forgetfulness comes between mind and sense. In order to have a better understanding of the said definition, we should first find out what he means by imagination.

Avicenna's explanation of imagination in Cannon is very interesting. He believes imagination keeps senses after coming together and preserves them in the absence of feelings. Therefore, imagination is different from panesthesia because the latter is the power that perceives senses and imagination make them occur even in the absence of senses. Avicenna provides a more precise definition of the how's of our relationship with the outside world that forms through senses. The senses are perceived by panesthesia but imagination has the capacity of preserving what is sensed even in the

absence of the sensed object. In other words, imagination keeps feelings in mind. Imagination is not a fictitious entity; yet, the empirical view of Avicenna can define it physiologically. He believes that imagination is one of the actions of the brain, i.e. we can understand different states of brain through actions like imagination. So, it can be said that brain actions are actually brain functions like seeing, hearing, memorizing, etc. and as it was previously mentioned, Avicenna distinguishes sensing from keeping senses in mind. He mentions that failure of senses might not occur due to their disorder, but might be the result of a disorder in the brain. It means sense organs like eye, ear or skin may not be defective but an individual may have a problem with his senses. According to Avicenna, the disturbance happens in the brain. It is interesting that failure of senses is sub-categorized as sensory actions and Avicenna has separated it from imagination disturbance. This difference can be important for us in defining diseases. In order to further explore the subject, the two concepts of sense and perception should be described. Sense is the physiologic ability of humans to collect information for perception. We collect data from our environment through our eyes, ears, skin and taste. Perception belongs to a higher level in the brain through which the data gathered from the sense organs are organized and interpreted to help us with recognizing and understanding the world around us. Neurophysiologically, an appropriate sense follows the properness of sense or-

gans and the specific areas of the brain. The primary sensory cortex perceives sensory data from sense organs and damage to this area can damage the related sense. For instance, injury to occipital lobe that is responsible for perceiving visual data leads to cortical visual impairment that is in contrast with ocular visual impairment (4) and this is what Avicenna calls sense failure due to sense actions involvement. It should be noted that in both cortical and ocular impairments, the person loses the ability to see objects; however, one is the result of brain injury and the other is due to eye injury. In order to have an appropriate perception, the brain requires the function of areas other than primary sensory cortex including ventral and dorsal occipitotemporal regions (5). Injury to these regions, depending on the damaged sense's processing spot, can lead to agnosia in which the person sees an object but cannot recognize it. In the definition of imagination, Avicenna asserts that there comes a veil between mind and sense and as he mentions, what is sensed by the brain, diminishes. So, sense action is intact in imagination damage and sense organs and the related networks perform flawlessly in the brain; however, damage to imagination causes inability to recognize the sensed object or as Avicenna cites, some kind of forgetfulness to the object occurs. This is the exact course of agnosia in which an individual does not recognize a sensed object despite having intact senses.

Avicenna wonderfully describes agnosia. As mentioned earlier, he explains the manner of sensing an object from the most basic level, i.e. through the sense organs, to its complicated processing in the brain and also elaborates disorders of the course. Perhaps, it can be said that Avicenna's account is the first precise explanation of agnosia among medical literature of the world.

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