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Abstract: In Orch OR model ; using electromagnetic fields, the brain captures, stores and analyzes the information of the cells and then sends the necessary commands to them. If the cells undergo changes and become cancer cells, the information stored in the brain and the electromagnetic signals inside and outside it change. Based on these changes, tumor and cancer formation can be detected in the early stages, and by storing the right information in the brain; it created the context for sending appropriate messages to return the cells to a normal state.

Keywords: Orch OR model; cancer; quantum; information; electromagnetic waves

1. Introduction

The Orch OR model [1–4] is one of the best and most complete models that explains the mechanism of information storage in the brain. This model, presented in collaboration with two famous experts in the fields of physics and medicine, shows that quantum information can be stored in the form of polarization of the hexagonal structures of molecules inside the microtubule or the movement and spin of electrons and photons. So far, different applications have been mentioned for this model, but perhaps the most important application is the treatment of incurable diseases such as cancer [5].

In Orch OR model; the process of creating and storing information is done by qubits or quantum bits that are inside the microtubules of neurons. These qubits are oscillating dipoles whose type of oscillation and how they are placed together or oriented can be related to the type of information they store. These dipoles can be electrical structures or they can also be magnetic structures such as the spin of electrons or nuclei or even molecules. In this model; information is stored in the form of quantum states of these quantum bits or their entangled states in the microtubules of neurons.

2. Methods

The OrchOR model explains [1–4,7,8] that a set of biological quantum processes in microtubules inside brain neurons; control synaptic activities and the storage and exchange of information between nerve cells. In fact, these microtubules have some molecules that these molecules have some hexagonal structures in their chemical structure. These hexagonal structures exchange electric and magnetic fields and store information in the form of quantum fields and act like biocapacitors and bioinducers. The addition of Penrose's ideas to the model played an important role in explaining the process of storing and retrieving information in the brain and also description of consciousness. This model is directly related to the fundamentals of quantum mechanics and space-time geometry. This model explains that there is a direct relationship between the biomolecular methods of the brain and quantum science. For this reason, the Orch OR model can be described as an influential model in the development of quantum biology, neuroscience and physics. In this model; vibrations of microtubules and molecules and ions and even electrons inside them can be seen in the signals taken from the brain in electroencephalography ('EEG') methods. Using these signals; it may be possible to control the storage of information in the brain. Each quantum bit of information in brain cells may be related to an action of a cell. In this way, by changing the stored information, cellular activities change. This property can be used to control and inhibit tumor cells. First, by observing the change of stored information related to a specific cell in the brain, it is possible to detect cell changes and

predict the probability of cancer. Then by storing correct and appropriate information; it is possible to modify the behavior of the cancer cell and change its state to a normal state.

To describe the relation between Orch OR model and cancer treatment; process of information storage and its recovering in brain cells should be understood. Previously; by using concepts of quantum biology; a proposal for information storage in brain cells has been proposed [2]. In this proposal, microtubules have the main role in quantum computation of information in brain cells. Quantum activities of microtubules have direct effects on evolutions in all parts of brain cells like dendrites and cell bodies of brain neurons and control exchange fields and ions in gap junctions. Exchanged quantum information between microtubules can cause to entanglement of microtubules among many neurons. Quantum information exchanging and quantum computations of information in entangled microtubules could be explained by Penrose "objective reduction (OR)," which is a model for quantum state reduction and thus; conscious moments could be connected to quantum mechanics and fundamental quantum spacetime geometry. In this model; each objective reduction chooses microtubule states which can cause to axonal firings, and control behavior of cells. The quantum computations are "orchestrated" by synaptic inputs and memory (thus "Orch OR"). Orch OR may produce temporal non-locality, cause to emision of quantum information backward in classical time and contribute in conscious control of behavior. Also; Penrose OR (and Orch OR) may take non-computable influences from information embedded in spacetime geometry that prevents algorithmic determinism. Thus; Orch OR model may have the ability to describe real-time conscious causal agency and explains conscious free will [2–4,7,8]. On the other hand, in this model; information related to each cell of the body is explained by the quantum states of molecules in microtubules.These properties of Orch OR model may help us to propose a medical imaging technique for detecting cancer cells through changes in stored information related to activities of a special cell in microtubules and neurons. After the diagnosis of cancer cells and the place of information storage in the brain; by replacing the information related to healthy cells instead of the information of cancer cells; one can cause the production of electrical, magnetic and chemical signals that are able to restore the diseased cells to their normal state.

Before suggesting a technique for detecting and treatment of cancers in Orch OR model; it is need to know the process of information storage in this model. In this model; biological information processing, storage, and transduction are done by fields exchanging between subunits of microtubules. Thus; quantum biological information activities could be done by microtubule structure. These structures build some bio electrical and magnetic devices like bio- transistor circuits, bio-magnetic bubble memory, bio- charge transfer devices, bio-surface acoustic wave resonators, and producer of holography [3,4]. If the information storage location of each body cell is known in the brain; it will be possible to change the behavior of body cells and control them. It is enough to know the type of information stored in healthy cells. This information is related to the daily activity of normal cells; their growth and their interaction with other cells and the surrounding environment. Changes in stored information compared to the normal state indicate various diseases such as cancer. On the other hand, the stored information related to each cell can be retrieved and produce bioelectric currents or electric and magnetic fields. These currents and fields can be sent to the target cell and control its behavior. If the information related to cancerous cells is replaced by the information of normal cells, the currents and fields sent by the brain can return the cancerous cells to a normal state.

In order to be able to use the Och OR model to treat cancers, we need to know the mechanism of information exchange between circuits and brain cells and cancer cells. Brain cells use different chemical, electrical and even magnetic methods to exchange information with cells of other body parts. In fact, first some vital information is stored in the brain cells and when the cells of other organs need that information; that information is recovered and sent to the target cells in the form of chemical or electrical and magnetic signals. To control cancer cells; we must examine the mechanism of the effect of signals sent from the brain on different cells. Fortunately, the effect of magnetic signals on cancer cells has been investigated [5].

Recently, an interesting mechanism has been proposed to control cancer disease and tumor cells by using the influence of extremely low frequency electromagnetic fields on cell growth [5].

Previously; it has been known that low-frequency magnetic fields have significant effects on tumor growth and cancer progress. However, the effect of a low-frequency magnetic field on the interaction between cells was still poorly understood. This mechanism considered the direct effect of magnetic field ditectely on cancer cells and indirect effect mediated by cell-environment. In this study; growth of 293 T cells, Hepg2 cells and A549 cells have been considered at 37 ± 0.18 °C in presence of an extremely low-frequency magnetic field of 20 Hz, 5-mT [5]. Cancer and tumor cells were more sensitive to magnetic field control in the original environment with control rate for Hepg2 and A549 estimated at 18% and 30% respectively. In this mechanism; noncancer cells showed no control effect on exposure to a low-frequency magnetic field. Now the question arises, how to use the application of magnetic fields in controlling cancer cells in the Orch OR model. The Orch OR model discusses the storage and retrieval of quantum information in the brain. After being decoded information in the brain cells, these quantum information become electric currents or electrical and magnetical fields and are sent to the target cells. If the impact of electromagnetic fields on cancer cells is known; one can store relevant information in the brain that by their decoding; the necessary electric and magnetic fields that can control cancer cells are produced.

3. Results

Before a cell goes out of its normal state and becomes a cancer cell, it sends its information to the brain through electromagnetic waves. Inside the brain; microtubules store information through the specific polarization of hexagonal molecules and their spin, or the movement of electrons and photons. Suppose two hexagonal structures have opposite spins, and the arrangement of spins is related to the storage of a quantum of information. If we assume that the storage of a quantum of information is related to the number associated with the probability function that the spin of one hexagonal structure should be up and the other down, and for example this function is cosine alpha, at least three hundred and sixty quantum of information for alpha integers and infinite quantum of information for half integers can be stored. On the other hand, the number of these structures in the brain is large, and therefore infinite quantum states can be stored in the brain. It is natural that all the activities of body cells are checked and archived in this information system (See Figures 1 and 2). Therefore, changes in cells and their transformation into cancerous cells are also checked in the brain and related information is stored. As a result; the polarization of molecules in the brain of a cancer patient is different from that of a healthy patient, and from the change of waves in the brain cells, it is possible to understand the creation of cancer cells. To treat all types of cancers, it is enough to know the type of polarization of brain molecules for a healthy person and by sending appropriate waves to the brain of a cancer patient; it forced the molecules inside it to return to their normal state of polarization. This change in polarity causes the brain to send messages to the cancer cells, which will most likely force them to return to normal (See Figure 3).
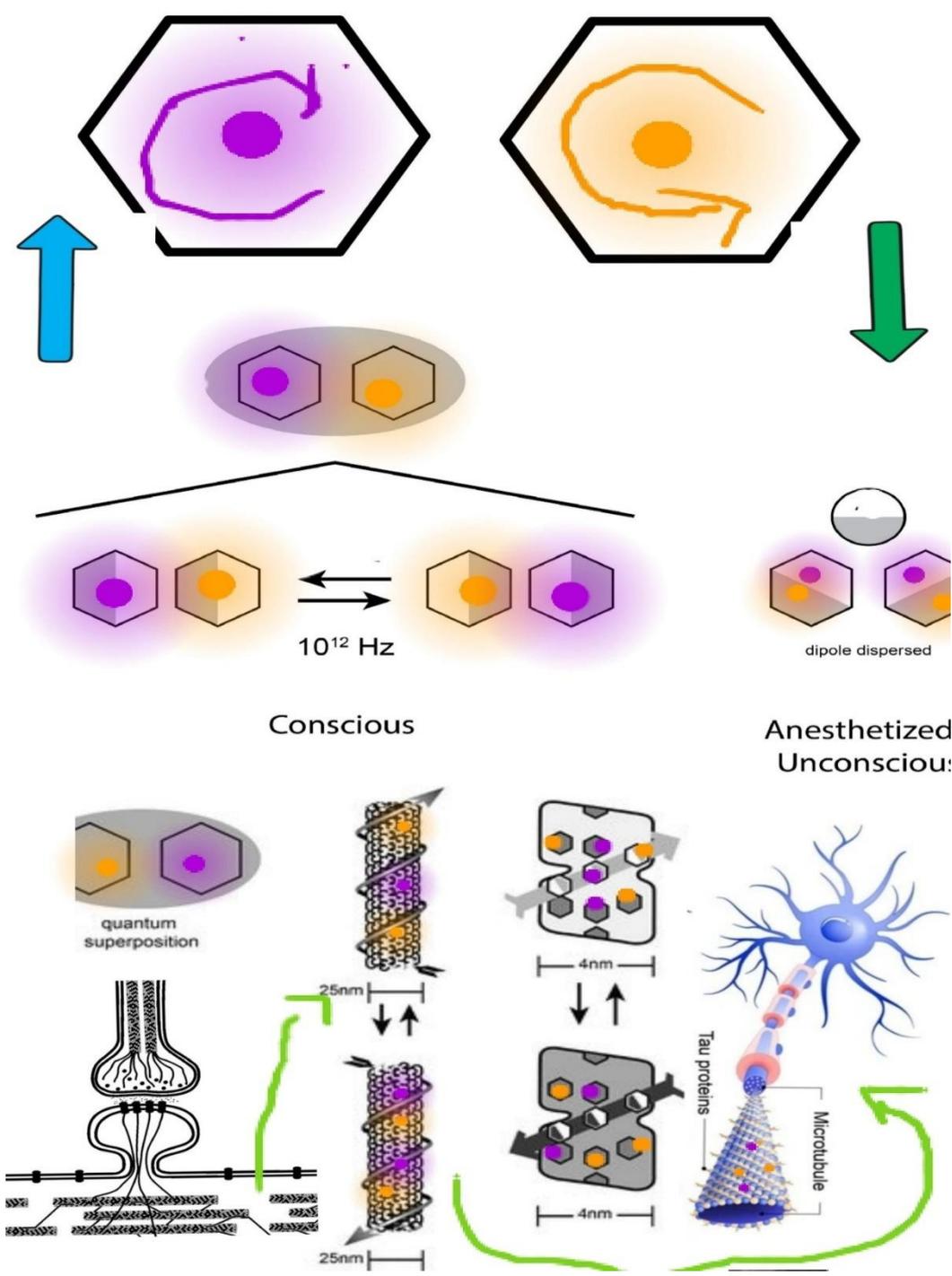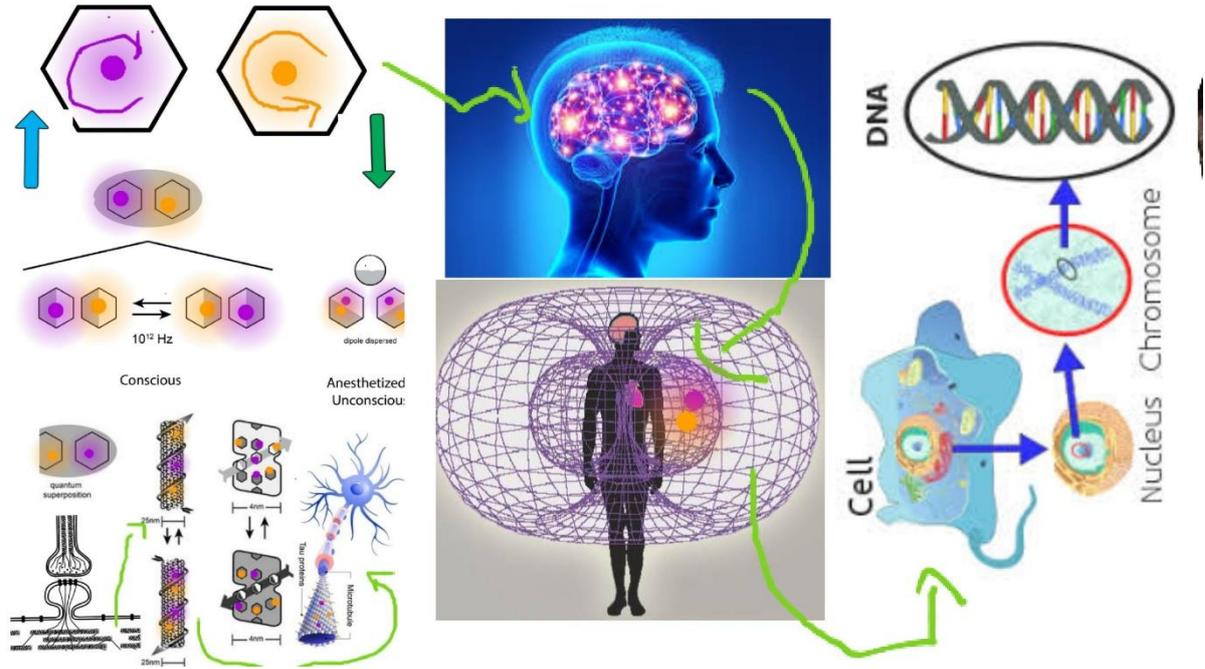
Figure 1. A model for storing information in brain.

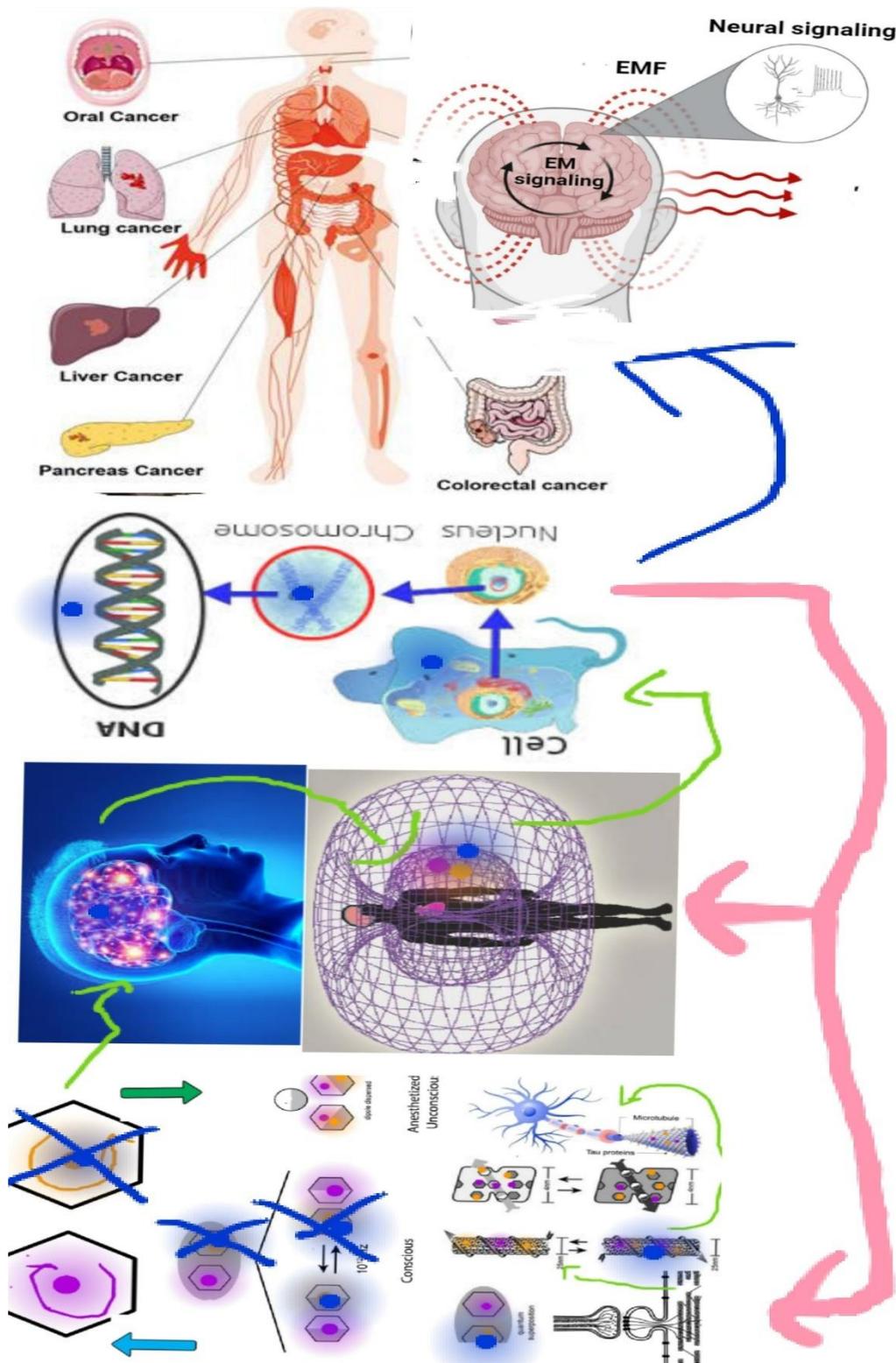**Figure 2.** Brain stores all cellular information.

Figure 3. By correcting stored information in microtubules of a cancerous patient; the brain can send the necessary messages to the cells to return them to normal.

4. Discussion

Brain cells store information of all cells of human's body and control them. Any change in a cell can be detected by brain cells. Thus; it is natural that by analyzing stored information in brain cells; some diseases like cancers are diagnosed. Fortunately; Orch OR describes the mechanism of information storage within microtubules of neurons. According to this model; by considering

radiated fields from microtubules; one can diagnose diseases. Then; by using external fields; one can replace information of non healthy cells by healthy cells and cure disease.

5. Conclusions

The brain has the ability to take the information of all the cells and send them appropriate commands after analysis. So; the changes caused by cancer in the cells change the information stored in the brain. By correcting this information; the brain can send the necessary messages to the cells to return to normal.

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