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Review Article

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Organic-to-Inorganic Cell Transformation

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Introduction

In the article entitled "Novel chemical-physical autopsy investigation in Sudden Infant Death (SIDS) and Sudden Intrauterine Unexplained Death Syndromes (SIUDS)", new types of observations are introduced in cases of SIDS, trying to understand the reason for those deaths and why babies that look healthy die during sleep in the first days/months of their life [1].

For this reason, we analysed the brain of these babies from a normal histopathological point of view performed through an innovative methodology of environmental scanning electron microscopy combined with an energy-dispersive spectroscopy system.

That novel analysis allows the observation of the samples at much higher magnifications than are obtainable through optical microscopy. In addition, the method reveals the elemental chemical composition of what is observed. The two visions (histological and electron vision) verified an impressive presence of micro- and nanosized foreign bodies of different chemical composition. Observation through optical microscopy cannot identify nanometric-sized presences and, in any case, cannot chemically analyze what is observed. Thus, the optical microscopy currently used does not allow the histopathologist to realize exactly what may appear to him as "dirt". The presence in the brain of foreign bodies in the form of micro- and nanosized particles, and their composition cannot help but lead any scientist to ask questions.

1. What is their origin?
2. What mechanisms of dispersion in the body are involved?
3. What is/are the entrance point(s)?
4. How can those foreign bodies cross the blood-brain barrier?
5. Does that particulate matter represent a form of environmental exposure the baby suffered?
6. Once in the body/brain, what is their interaction with tissues/cells?

Discussion

Even if we cannot dismiss the hypothesis of a direct injection into the baby of polluted drugs or the ingestion of polluted food (also breast milk), given the very young age of the subjects and, therefore, the very low possibility of exposure to polluting sources, the most reasonable possibility of explanation appears to be that of a transition between mother and fetus during gestation.

The mother can have been exposed to environmental pollution, be it inhaled or ingested with polluted food, but also to the administration of drugs containing these types of particles. An example can be the adjuvants contained in vaccines. In many cases, they are composed of Aluminium (also as nanoparticles), Aluminium hydroxide, or Aluminium phosphate. Our observations identified these components that are, however, declared by the producers themselves. We do not know if the mother had this type of injection or the baby himself or both. Other particles can be related to specific environmental pollution suffered by the mother during the gestation period that can hardly be identified. In one case, we managed to link a particle found in a baby's cancer with those of pollutants released by an industry of the environment where the mother lived [2].

A particularly interesting case is that of having detected entities that morphologically appear to be cells but which, chemically, are based on Silicon or silica instead of Carbon. (Figure 1 a, b). Those cells are visible in the backscattered mode of the Scanning Electron Microscope since they are atomically denser than "regular" cells.

The indeterminacy of the Silicon compound is due to the fact that the X-ray microprobe of the EDS collects the total signal of the cell (Carbon, Oxygen, Silicon…), but part of the signal comes also from the surrounding biological tissue where the observed entity is trapped and does not "see" the Hydrogen. For that reason, we cannot distinguish Silicon from silicones, silica, or silica hydrated.

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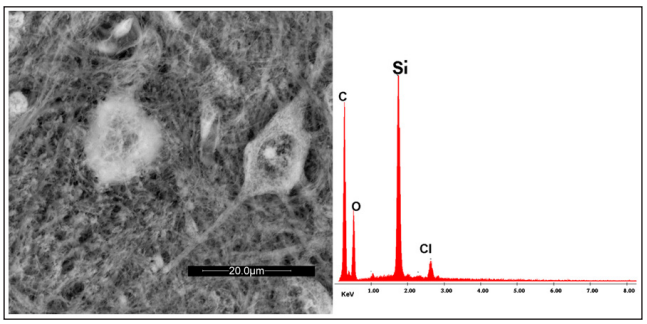

Figure 1: Scanning Electron Microscope image of a transformed cell with the Energy Dispersive spectrum showing that the cell content is not only Carbon, Oxygen, Chloride, but mostly Silicon

The anomaly, found twice in that section, needs an accurate explanation, since that raises doubts on the diagnostic work of the histopathologist. In fact, the doctors involved in the case noticed the absence of cells, and the pathology was attributed to this anomaly. But the interpretation is wrong, since the cells are actually present, but the change in their chemistry prevents their staining according to normal histological techniques. In this specific case the cells are transparent, thus hindering the correct diagnosis.

In nature, there is a chemical process that drives the exchange of Carbon ions with Silicon ions. This exchange is at the base of the petrified wood phenomenon [3].

Sigleo AC "demonstrated that silica mineralization is an impermeation or void-filling process in which mineral matter is deposited in cracks, openings between cells, and spaces left by cell fluids" [4]. Petrified wood preserves the original morphology of cell structure.

The wood silicification proposed by Sigleo implies a Hydrogen bonding between silicic acids [$SiO_x(OH)_{4-2x}$] and the hydroxyl functional groups in cellulose.

In the case of biological tissues, other changes involving part of cell structure (organelles) can be interested in the mechanism.

The process in wood is very slow and takes thousands of years. There is no literature demonstrating a similar process occurring in-vivo in non-vegetal cells, and the time, in case, involved, even if, in-vitro, in the nanotechnological field, it is possible to bind silica to DNA and change the cell structure [5-7].

There is another aspect that should be discussed: how did Silicon reach the brain?

The mechanisms that allow chemicals to pass through the blood-brain barrier of the human brain are well-known enough, though many aspects remain unknown to date [8]. The scientific literature reports cases in which Silicon has been found in the human brains of elderly people, demonstrating that, over time, it is possible that Silicon-based products could cross the barrier [9,10]. Based on this observation, it is possible to assume that Silicon-containing products with which humans come into contact could be potential hazards to human health if these chemical compounds could reach particular areas of the brain. Silicon products that we come in contact with during our lifetime are in the foods we eat, in some compounds used in dentistry, in toothpaste and restoration products, in some specific chemicals [11-15]. In the near future, there are plans to use Silicon nanoparticles to thermally stabilize mRNA vaccines, such as those recently used for COVID-19, but without worrying too much about side effects due to indiscriminate accumulation of Silicon in the brain [15]. In addition, scientific research aimed at developing artificial intelligence is designing DNA modified with the presence of Silicon atoms instead of Phosphorus [16]. Indiscriminate use also of artificial structures for medical use, implantable in the human brain based on microchips made of Silicon, could irreparably contaminate some vital functions of the human brain [17]. Based on the data reported in the literature, it appears evident that Silicon-based compounds can cross the blood-brain barrier in their water-soluble form [$Si(OH)_4$) or in more complex organometallic molecules, and subsequently precipitate as insoluble Silicon dioxide, within brain tissues.

Conclusions

In conclusion, having identified Silicon for the first time in the brain tissue of a newborn can be explained by the assumption of particular substances by the mother, transferred in whole or in part to the fetus, and their consequent passage to the brain during gestation.

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