

LIFESTYLE AND ALZHEIMER'S DISEASE

Alzheimer's disease is the most common dementia in both Europe and Spain and it has a particular relevance in Galicia. The Federación Alz  imer Galicia estimates that about 70,000 people suffer this disease, according to the WHO, it is the third cause of disability in people over 60 years.

One of the great handicaps we face is that, despite of the efforts we have made, we do not know the origin of the disease. This causes the delay of the appearance of new drugs or therapies that help, if not to cure the disease, at least delaying its appearance and evolution.

The classical theories about the origin of Alzheimer have failed. They are: the Amyloid hypothesis and the Tau theory. Obviously, these are two events that appear in most cases of Alzheimer but, if we have anything sure, it is that they are two secondary events to an unknown primary event.

One of last year's great hopes is that **new theories appear that could cause Alzheimer's disease**. These are:

- 1) Theory of fungal infection in the brain.
- 2) Theory of failure of the neurogenesis.
- 3) Theory of a failure of the blood-brain barrier.
- 4) Theory of a damage in the neurons of the *Locus Ceruleus*.
- 5) Theory of an early activation of astrocytes in the brain.

Future will tell us if any of these theories is true or if new lines of research will appear. Nevertheless, the research is making progress and bearing fruits. During last year, very interesting works were published and they demonstrate something that we have suspected in the laboratories of investigation for a long time: **The origin of Alzheimer's disease does not occur in "older" brains, but, most likely, it happens during our youth.**

In a study conducted at the Karolinska Institute in Stockholm, it was shown that 20 years before the first symptoms appear, changes have already occurred in our brain. In another study made in Switzerland with brains of young people who died because of sport accidents, it was found that some of these people had already plaques of amyloid and hyperphosphorylated Tau in the brain. This means that, whatever causes the disease, it happens when we are young, perhaps during our adolescence, or maybe before.

We can delay its appearance

However, not everything is darkness in this disease, there is increasing evidence that some lifestyle factors are related to Alzheimer's development. Otherwise, there are also factors in our lifestyle that can protect us, delaying the appearance of the disease

or even slow its progress. Many of them are potentially modifiable and include smoking, physical activity, education, social commitment, cognitive stimulation and diet. Modifying most of these factors has other health benefits as increasing the potential benefits by changing the individual's lifestyle.

An evidence about how changing the nutrition and physical activity can alter the development of the disease is that **the onset of the disease can be delayed for five to seven years by just changing the diet to healthy living habits, performing physical activity and maintaining a correct mental activity.** Although this does not seem much numerically speaking, actually, it is a lot. It means that, if a person begins to have the classic symptoms of the disease with 60-65 years old, it would be delayed to 65-70 years. Taking into account the high social and economic cost of the disease, especially in families, and that a person with Alzheimer would need three caregivers, these five years mean a lot.

In addition to the delay of the onset of the disease five years, if the person with Alzheimer succeeds in maintaining a correct physical, mental and nutritional activity, given that it is complicated, it would make the development of the disease slower. In the end, if we have the willpower to change these factors of our life, we would achieve something very important: growing old with quality.

What is meant by physical exercise?

To explain the latest studies of how physical exercise can help protect our lives from this devastating disease, I want to clarify something very important that people ask, **what is physical activity?**

Many people believe that is practising a sport at a professional level or even at the amateur level in a serious way. This is a resounding NO. Practising sports is good for many reasons, but it is not doing physical activity. Performing physical activity is something simpler than this, and **EVERYBODY CAN DO IT.** It is walking 20-30 minutes every day a couple of days a week, dancing, swimming, doing gardening, carrying out organized activities like Taichi, aquatic gymnastics activities, etc.

If we try to answer this question, but in a very special and real case, such as what is physical activity in a person with dementia, we do not find consensus among the experts, because it depends on each patient. Many experts say that it is moderate exercise of 150 minutes a week, but in sessions of 10-15 minutes a day in the form of morning walks, seeing shops and doing gardening in the afternoon.

In both cases, there is something that is important to understand. Performing physical activity depends on each person, there are people who like walking, another love swimming, another gardening, another dancing, and another martial art. The important thing is that each one choose what they like. Overcoming this and launching ourselves to live and enjoy what life offers us is in our hands, and it is the difference between people who are suffering a disease and take it well and even consider it as a second choice to live and those who let themselves be carried away and ended up locked in their house and inside themselves for long years.

We have known for many years how physical activity is able to modulate our brain at a structural and molecular level. It is well known that performing exercise increases the

number of synapses in our neurons (connections between neurons). In addition, physical activity causes a release of substances (growth factors and hormones) by the muscles and other organs that are able to enter the brain and help improve our memory and also, making us feel good.

Who has not experienced these effects throughout their life? We know that, even without scientific explanations, **when we perform a physical activity constantly and during an average period of time (for a few months), we feel much better**, cognitively we are faster, we have a higher capacity for memorizing and learning, and we cope better with periods of stress and excessive workloads or familiars.

Hope for the future

Personally, I am convinced that in the future a drug will be discovered, or several drugs that can cure Alzheimer's disease and very probably, in the short term, it will be possible to obtain some that will delay the disease. However, this is something that will depend on a strong push for research globally. That these changes can reach our country quickly, will only depend on the efforts that are made in research now and in the coming years in our country. We are very accustomed to other countries dealing with our problems and our own inertia and European development makes these changes end up reaching Spain with 30 years of delay. This not only depends on our different governments and institutions, but also depends mainly on our society, that is, on ourselves. **The fact that society claims that there is a big investment in research in our country, specifically in this dramatic disease, is one of the strongest stimuli that can be done.**

While a cure is not found, we can only do one thing, which is also very important – not only to stop Alzheimer's disease, but also many serious metabolic and vascular diseases – to change our lifestyle towards a healthy diet and to perform a mild physical activity that we like on a regular basis.

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