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By Alessandro Ferro

The Virus and its Hair Connection: Pandemic primarily affects bald men

A hair-loss drug could stop the spread of this virus that primarily affects bald men, due to mechanisms of certain male hormones that cause hair loss, according to a new study. Still in the editing stage, the research follows on the heels of another study produced at Yale University in the United States. It was conducted very recently and opens up new possibilities in the fight against COVID-19. Apparently, the virus chiefly affects bald men, as opposed to those who have full heads of hair, by a ratio of three to one. This "preference" is not random, but due to the mechanism of hormonal receptors responsible for hair loss, which in turn could suppress COVID's advancement in the body. The only Italian author of this study, Torello Lotti, who is president of the World Health Academy of Dermatology and a professor of Dermatology and Venereology at Guglielmo Marconi University, explains the nature of these mechanisms in an exclusive Il Giornale interview.

What are the connections between COVID-19 and alopecia?

The study was launched in February 2020, and published in the US on April 1. At the beginning, we started with a statistical observation of those who fall ill with COVID: Prior to puberty, the virus affects only 0.6% of the cases, and the relationship between men and women finds men affected to a much greater extent, about 58% versus 42%. All of this made us wonder: What differs among these populations? Prior to the developmental years, hormonal activity is absent, and, between males and females, we know that testosterone is much higher in men than in women. But our observation goes beyond this and we discovered that the males who are most affected are bald and that ratio is three to one.

How did you make this discovery?

We must take a step backward to see what takes place in rabbits. The most effective male hormone that causes hair loss, called dihydrotestosterone and activated by an enzyme called 5 alpha reductase, is capable of blocking the production of a substance that is called pulmonary surfactant, which consists of a blend of cholesterol lipids and phospholipids that adheres to the lungs' alveoli, the smaller ones, and prevents them from collapsing during expiration, when air is breathed out. Collapsing causes difficulty and respiratory distress, which is what is observed even during the COVID-19 infection. Well, if these rabbits are administered an anti-androgen drug called flutamide, which is nowadays commonly used to prevent hair loss in androgenetic alopecia, everything goes back to normal: the rabbit starts producing its pulmonary surfactant and the collapse mechanism of the alveoli no longer takes place.

So is flutamide a miraculous drug?

It has been commercially available for many years and it is an anti-androgen drug, therefore it is a substance that blocks the effect of dihydrotestosterone, which is the same molecule that causes hair loss, absent in children and women and that has a very low presence in men who have more hair compared to bald men. This is where our theory comes from. This pulmonary surfactant is influenced by the male hormone receptors.

Is a drug that stops hair loss and that, therefore, could block the virus already commercially available?

Yes, it's finasteride, which stops hair loss. It has been observed that those who suffer from a prostatic hypertrophy or who lose their hair and take finasteride, get less ill with COVID. If we reduce the expression of the androgens' receptors that are saturated by finasteride, this reduced expression will not allow the coronavirus to infect the pneumocytes, especially the type II ones, since it would find a normal surfactant.

How does the Coronavirus attack the pulmonary alveolus?

It has been observed that this virus is like a billiard ball with a crown and many little spikes, small thorns that come out. One of these "thorns" attaches to a molecule called Ace2 and the reduced Ace activity is directly proportional to the reduction in the activity of the androgen hormones. If therefore the androgens' receptors become saturated, the conversion enzyme shall not be expressed at the level of the pulmonary alveolus and, in this way, the virus could supposedly no longer attack since it would be unable to produce the illness. Essentially, it enters empty.

Ultimately, could bald men take finasteride to prevent a possible COVID-19 infection?

Undoubtedly, it would have to be taken as a preventive measure. If it were to be taken the day after the virus entered the body, it would have no effect. And it is at this point that our study came out and it was published in the United States on April 1. After five and a half weeks, on May 12, the group from Yale University published on its own paper how the 5 alpha reductase inhibitors, thanks to dutasteride (a potentiated finasteride), blocks the Ace2 levels, that lower to such an extent that the virus no longer enters the pulmonary alveoli, or the cardiac cells.

So, even the Americans have confirmed your study?

After six weeks, our Yale colleagues confirmed our study by going further, since they verified the collapse mechanism of the pulmonary alveoli and thanks to the reduction of the Ace2 levels, the virus can no longer enter, it no longer finds the receptors to be able to enter inside human cells. If it does not enter the cells, the virus passes by like a glass of water without the ability to infect the body.

What can this discovery's international reach be?

In our opinion, it's especially important. Obviously, it should be fine-tuned, and we'll have to find another drug other than finasteride or dutasteride, since we know that they cannot be prescribed to fertile women. We must find an analogue, and we have been working on it for some time, which would be able to inhibit the receptors of the androgen hormones so that the virus can no longer find any points to attach itself to. Consequently, even if we were to contract it, if it is unable to find a key to open the door to get into the cells, the game is won.

So a drug could substitute or supplement the vaccine that will arrive?

Not only could it supplement it, but it is forecast that the vaccine will have little effect in a large amount of people for a myriad of reasons, particularly in connection with the coronavirus. A possible drug could become the mechanism to stop the illness at a much lower cost than the vaccine and with much lower risks, since the receptors are specific and the effects of the vaccine are being scrutinized and, to this day, there are no guarantees.

What are the contraindications for those taking finasteride?

To date, a "post-finasteride syndrome" has been documented. Those who take it for a long time and then stop taking it can be faced with reduced sexual activity or depression. However, this did not lead any health authority in the world impeding it from being used to prevent baldness

(androgenetic alopecia) and prostatic hypertrophy or prostate cancer. The two latter conditions make up most indications for finasteride and dutasteride. Consequently, no side effects have been described. We do not have a full picture of this syndrome, how many people are impacted, or if other mechanisms can cause it. Based on what was observed thus far, we have not found real side effects.

So can it be affirmed that bald men die more often than those who have more hair?

We've asked health departments around the world to inform us, regarding people who died of coronavirus, the type of alopecia they had and to provide us with figures. But the situation is still so much in a state of flux that we don't yet have an answer. However, I do believe that news reports are communicating a figure that's based on two scientific publications: our own research and the study from Yale—which ranks among the top ten universities in the world. The two of them identify in the hormonal receptors' baldness mechanism one of the main ways in which the virus leads to illness and death. In the other cases, it either remains asymptomatic or it subsides like a mild flu.

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