

Stress Diet and Immunity

Raksha Banka*

Student, Department of Health Science, NSHM Knowledge Campus, Kolkata, India

*Corresponding author: rakshabanka033@gmail.com

Abstract: It is known to all that there is a relationship between our mental and physical well-being. According to different scientific research, it has been realized that there is a deep connection between the emotions of a person and his dietary intake, which affects his immune states. This review article shows that the part of the brain, that is, the prefrontal cortex (PFC), is associated with stress & depression. People who have the greatest activity in the right PFC shows lower antibody levels after a vaccination. In contrast, those having exceptional activity in the left PFC develop high antibody levels when they recall happy times. So, emotions play an important role in regulating systems in the body of a person that influences his health.

Keywords: Immune system, Emotion, Stress, Adrenaline, Diet, PFC.

1. Introduction

The immune system is a collection of billions of cells that travel through the bloodstream. They move in and out of tissues and organs, defending the body against antigens (like, virus, bacteria etc.). There are two types of lymphocytes:

1. T lymphocytes – When the invader gets inside a cell, the T cells lock on to them, multiply and destroy them.
2. B lymphocytes – It produce antibodies which are released in the fluid which surrounds the body cells to destroy the antigens which have invaded inside.

The main types of immune cells are white blood cells (WBC), which are of two types - lymphocytes and phagocytes. When we are emotionally stressed, the ability of the immune system to fight against antigens is reduced and we become more susceptible to infections.

There is a hormone in the body which can reduce the functionality of the immune system, for example lowering the number of lymphocytes. This hormone is called corticosteroid, which is the stress hormone.

Stress is linked to many diseases such as hypertension, heart disease, asthma, headaches and many others. Sometimes drinking and smoking can also take place due to stress which indirectly affects the immune system.

2. Stress and Illness

After examining the human digestive system, there has been found a connection between persistent stress and an increased risk of gastrointestinal disorders. During stress, digestion is inhibited. This affects the health of digestive system and may

cause ulcers. A hormone, known as Adrenaline, which is released during a stress response may also cause ulcers.

Stress responses increase the strain upon the circulatory system due to increased rate of heart, altering pulse rate, etc. Stress can also affect the immune system by raising the blood pressure.

Hypertension, i.e., raised blood pressure, is a major risk factor in coronary heart disease (CHD), which is the result of stress. CHD can be caused basically by eating too much of salt, or also by drinking too much of alcohol or coffee.

Hormones, such as adrenaline & noradrenalin, have actions on the release of free fatty acids. The release of free fatty acids in extreme amount increases the blood cholesterol levels, which results due to stress factor. Stress produces these hormones to release. The cholesterol particles clumps together, thus leading to clot formation in the blood and in the arterial walls, and occlusion of the arteries take place.

In turn, raised heart rate leads to a more rapid build-up of cholesterol on the arterial walls, and cholesterol gets trapped in these lesions.

Stress is associated with all types of bad habit such as smoking, drinking alcohol in excess, lack of exercise and poor diet due to lack of time, lack of sleep, etc. Thus stress have an indirect effect on illness due to these reasons.

All of these are likely to have an adverse on effect on a person's health.

3. Stress and Immune Function

Short term suppression of the immune system is not very dangerous but chronic suppression or long term suppression makes the body more vulnerable to disease and infection. For example, in Acquired Immuno Deficiency Syndrome (AIDS), the immune system is suppressed and it makes the body vulnerable to illness. So, stress would just lead to frequent illness and infections.

4. Stress, PFC and Immune System

The prefrontal cortex (PFC) plays an important role in the integration of behaviour and immune system. This part of the brain translates the stressful experience into adaptive behaviour through regulation of hypothalamic paraventricular nucleus (PVN) which, in turn, controls sympathoadrenal and hypothalamic-pituitary-adrenal (HPA) activity. The HPA conveys the signal that link the CNS with the immune system.

People who have the greatest activity in the right PFC shows lower antibody levels after a vaccination. In contrast, those having exceptional activity in the left PFC develop high antibody levels when they recall happy times. Thus avoidance of stress and depression can make left PFC work faster and help in good immune system.

5. Stress and Diet

Major anxiety can have a major effect on the food consumption. There is a definite connection between stress and our appetite. Stress causes some people to ignore their hunger and refrain from eating for long stretches. For others, stress turns them into emotional eaters and they overeat. As the brain is involved during stress, so it send cues to the bodies when people feel stressed. This cue is the cortisol (stress hormone), which makes the person crave salty, sugary and fatty foods, because the brain thinks it needs fuel to fight whatever threat is causing stress. The best way to combat stress or emotional eating is to be mindful of what triggers stress eating and to be ready to fight the urge.

6. Conclusion

These studies and numerous others make a strong case for the immune system serving as both a channel and a controller

of our emotional state. The idea that the immune system is affected by physical as well as social environment must be consolidated. Recent estimates by World Health Organization suggest that by the year 2030, depression and stress-related problems will be the most widespread disorders on the planet, closely followed by autoimmune disease and allergy. With growing evidence that our emotional and immune state share a complex relationship with each other, it is believed that we should begin a serious examination of the significance of these two interdependent states. It is hoped that in the future, the collaboration of clinicians, psychologists and immunologists to understand & ameliorate disease of any kind becomes the norm. Regular exercise and enough sleep can also help us to better handle the challenges that come up every day. Because as that old adage tells us:

“Happiness & healthiness go hand in hand.”

References

- [1] www.health.clevelandclinic.org/how-stress-can-make-you-eat-more-or-not-at-all/
- [2] www.pubmed.ncbi.nlm.nih.gov/18281193
- [3] www.simplepsychology.org/stress-immune.html
- [4] www.immunology.thejournalofcellsmoleculelessystemstechnologies.com
- [5] www.imm.12341.pdf