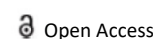




PERSPECTIVE



Types of Immunodeficiency Diseases and its Causes

Ja Masa*

Department of Pathology, University of Cambridge, Cambridge, United Kingdom

ARTICLE HISTORY

Received: 04-Oct-2022, Manuscript No. JCMEDU-22-77757;
Editor assigned: 07-Oct-2022, PreQC No. JCMEDU-22-77757
(PQ); Reviewed: 21-Oct-2022, QC No. JCMEDU-22-77757; Revised:
28-Oct-2022, Manuscript No. JCMEDU-22-77757 (R); Published:
04-Nov-2022

Description

Immunodeficiency, also known as immunocompromis- ation, is a condition in which the immune system's abil- ity to fight infectious diseases and cancer is impaired or absent. Most cases are acquired ("secondary") due to external factors affecting the patient's immune system. Examples of these external factors include HIV infection and environmental factors such as nutrition. Impaired immunity can also be associated with genetic diseases/ deficiencies such as SCID.

In the clinical setting, immunosuppression by some drugs, such as steroids, can be either a side effect or a putative goal of treatment. Examples of such uses are organ transplants as an anti-rejection measure and in patients with overactive immune systems, such as auto- immune diseases. Some people are born with intrinsic defects in the immune system or primary immunodeficiency.

A person who has an immunodeficiency of any kind is called immunodeficient. An immunocompromised per- son may be particularly vulnerable to opportunistic in- fections in addition to the common infections that can affect anyone. It also reduces immune surveillance of cancer, in which the immune system scans the body's cells and kills neoplastic cells. They are also more sus- ceptible to infectious diseases due to reduced protection provided by vaccines [1].

Types

Primary immunodeficiencies: Primary immunodeficiencies are disorders in which part of the body's im- mune system is missing or does not function properly. To be considered a primary immunodeficiency (PID), the cause of the immune deficiency must not be sec- ondary in nature (ie, caused by another disease, drug treatment, or exposure to environmental toxins). Most

primary immunodeficiencies are genetic disorders; most are diagnosed in children under one year of age, although milder forms may be recognized only in adult- hood. Although there are over 430 recognized PIDs as of 2019, most are very rare. About 1 in 500 people in the United States are born with primary immunodeficiency [2]. Immune deficiencies can lead to persistent or recur- rent infections, auto-inflammatory diseases, tumors and disorders of various organs. There are currently a lim- ited number of treatments for these diseases; most are specific to a particular type of PID. Studies are currently evaluating the use of stem cell transplantation (HSCT) and experimental gene therapy as treatments for lim- ited subsets of PID [3].

Secondary immunodeficiencies: Secondary immuno- deficiencies, also known as acquired immunodeficien- cies, can result from a variety of immunosuppressive agents, such as poor diet, aging, certain medications (eg, chemotherapy, disease-modifying antirheumatic drugs, immunosuppressive drugs after organ transplantation, glucocorticoids), and environmental toxins, such as mercury and other heavy metals, pesticides and petro- chemicals such as styrene, dichlorobenzene, xylene and ethylphenol [4]. In drug terms, the term immunosup- pression usually refers to both the beneficial and poten- tial adverse effects of reduced immune system function, while the term immunodeficiency usually refers solely to the adverse effect of increased risk of infection [5].

Many specific diseases directly or indirectly cause im- munosuppression. This includes many types of can- cer, especially cancers of the bone marrow and blood cells (leukemia, lymphoma, myeloma), as well as some chronic infections [6]. Immunodeficiency is also a hall- mark of acquired immunodeficiency syndrome (AIDS), caused by the human immunodeficiency virus (HIV). HIV directly infects a small number of helper T cells and also indirectly impairs other immune system responses [7].

Contact: Ja Masa, E-mail: jamasa@gmail.com

Copyrights: © 2022 The Authors. This is an open access article under the terms of the Creative Commons Attribution NonCommercial ShareAlike 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).

Various hormonal and metabolic disorders can also lead to immune deficiency, including anemia, hypothyroidism, and hyperglycemia. Smoking, alcoholism and drug addiction also suppress the immune response. Heavy training and competition schedules increase the risk of immune deficiency in athletes [8].

Causes

The cause of immunodeficiency varies depending on the nature of the disorder. The cause can be both genetic and acquired due to improper nutrition and poor sanitary conditions. Only for some genetic causes are the exact genes known.

References

- [1] Chinen J, Shearer WT. Secondary immunodeficiencies, including HIV infection. *J Allergy Clin Immunol.* 2010;125(2):S195-203.
- [2] Lee AR, Wong SY, Chai LY, Lee SC, Lee MX, Muthiah MD, et al. Efficacy of covid-19 vaccines in immunocompromised patients: systematic review and meta-analysis. *bmj.* 2022 ; 376.
- [3] Zbinden D, Manuel O. Influenza vaccination in immunocompromised patients: efficacy and safety. *Immunotherapy.* 2014 Feb;6(2):131-9.
- [4] Rosen FS, Cooper MD, Wedgewood RJP. The primary immunodeficiencies. *N Engl J Med.* 1984;3(11):300-10.
- [5] Gleeson M, Nieman DC, Pedersen BK. Exercise, nutrition and immune function. *J Sports Sci.* 2004 :186-203.
- [6] Grammatikos A, Bright P, Bhatnagar R, Johnston S. How to investigate a suspected immune deficiency in adults. *Respir Med.* 2020 ; 171:106100.
- [7] Grammatikos AP, Tsokos GC. Immunodeficiency and autoimmunity: lessons from systemic lupus erythematosus. *Trends Mol Med.* 2012;18(2):101-8.
- [8] Bourke CD, Berkley JA, Prendergast AJ. Immune dysfunction as a cause and consequence of malnutrition. *Trends Immunol.* 2016;37(6):386-98.