Journal of Clinical Infectious Diseases & Practice

Editorial Open Access

Immunology and Infection by Protozoan Parasites

Edecio Cunha-Neto[1]* and Mauricio Martins Rodrigues[2]

[1]*Heart Institute, University of Sao Paulo School of Medicine, Sao Paulo, SP, Brazil*
[2]*Escola Paulista de Medicina, Universidade Federal de Sao Paulo, Sao Paulo, SP, Brazil*

Introduction

When protozoa enter the blood stream or tissues they can often survive and replicate because they adapt to the resisting natural host defences. The interaction of immune system with infectious organisms is a dynamic interplay of host mechanisms aimed at eliminating infections and microbial strategies designed to permit survival in the face of powerful effector mechanisms. Protozoa cause chronic and persistent infections, because natural immunity against them is weak and because protozoa have evolved multiple mechanisms for evading and resisting specific immunity [1].

The protozoan parasites, that cause necessary diseases moving millions of individuals worldwide particularly within the tropical and climatic zone areas, area unit chargeable for high mortality and morbidity. Most of those parasites area unit transmitted by insect vectors and invade a spread of various tissues in their class hosts [2]. Prophylactic and therapeutic methods area unit so much from satisfactory. Indeed, though important progress has been created in our understanding of the immune reaction to parasites, no definitive step has nonetheless been with success done in terms of operational vaccines against parasitic diseases. Moreover, some medicine area unit offered, however there are a unit issues over their effectiveness, toxicity, and emergence of resistant strains [3].

Natural and specific immune response to protozoa

Different protozoa vary greatly in their structural and biochemical properties and stimulate distinct patterns of immune responses and have evolved unique mechanisms for evading specific immunity [4]. Protozoa activate quite distinct specific immune responses, which are different from the responses to fungi, bacteria and viruses. Protozoa may be phagocytozed by macrophages, but many are resistant to phagocytic killing and may even replicate within macrophages. T. brucei gambiense is the best example of protozoa which can induce humoral immune response because of its extra-cellular location. In Leishmania sp. infections, cellular defense mechanisms depend upon CD4+ T-lymphocytes and activate macrophages as effector cells that are regulated by cytokines of Th1 subset. Plasmodium sp. is a protozoa which show the diversity of defence mechanisms which can be cellular or humoral, depending on Ag and protozoa's location [5].

Immune evasion mechanisms of protozoa

Different protozoa have developed remarkably effective ways of resisting specific immunity: anatomic sequestration is commonly observed with protozoa Plasmodium and T. gondii; some protozoa can become resistant to immune effector mechanisms [6,7]: Trypanosoma, Leishmania and T. gondii; some protozoa have developed effective mechanisms for varying their surface antigens: Plasmodium and Trypanosoma; some protozoa shed their antigen coats, either spontaneously or after binding with specific antibodies: E. histolytica; some protozoa alter host immune response by nonspecific and generalized immunosuppression (abnormalities in cytokine production, deficient T cell activation): Trypanosoma, Leishmania, Toxoplasma, Entamoeba [8].

Conclusion

Protozoa activate numerous, different immune mechanisms in human body. Evolution, progression and outcome of diseases depend upon these mechanisms. Resent progresses in research have defined and selected Ag as candidates for new vaccines. Better definitions regarding the role of cytokines in protozoan infections will facilitate rational development of cytokines and cytokine antagonists and their use as immunotherapeutic agents.

Acknowledgment

The author would like to acknowledge University of Sao Paulo School of Medicine, Sao Paulo, SP, and Brazil for their support during this work.

Conflicts of Interest

The author has no known conflicts of interested associated with this paper.

References

1. Klapproth H, Reinheimer T, Metzen J, Munch M, Bittinger F (1997) Non-neuronal acetylcholine, a signalling molecule synthezised by surface cells of rat and man. Naunyn-Schmiedeb Arch Pharmacol 355:515-523.
2. Conti Tronconi BM, McLane KE, Raftery MA, Grando SA, Protti MP (1994)The nicotinic acetylcholine receptor: structure and autoimmune pathology. Crit Rev Biochem Mol Biol 29:69-123.
3. Verbitsky M, Rothlin CV, Katz E, Elgoyhen AB (2000) Mixed nicotinic-muscarinic properties of the alpha9 nicotinic cholinergic receptor. Neuropharmacology 39:2515-2524.
4. Zia S, Ndoye A, Lee TX, Webber RJ, Grando SA (2000) Receptor-mediated inhibition of keratinocyte migration by nicotine involves modulations of calcium influx and intracellular concentration. J. Pharmacol Exp Ther 293:973-981.
5. Galzi JL, Changeux JP (1995) Neuronal nicotinic receptors: molecular organization and regulations. Neuropharmacology 34:563-582.
6. Shriver SP, Bourdeau HA, Gubish CT, Tirpak DL, Davis AL et al. (2000) Sex-specific expression of gastrin-releasing peptide receptor: relationship to smoking history and risk of lung cancer. J Natl Cancer Inst 92:24-33.
7. Sekhon HS, Keller JA, Proskocil BJ, Martin EL, Spindel ER (2002) Maternal nicotine exposure upregulates collagen gene expression in fetal monkey lung. Association with alpha7 nicotinic acetylcholine receptors. Am J Respir Cell Mol Biol 26:31-41.
8. Klapproth H, Racke K, Wessler I (1998) Acetylcholine and nicotine stimulate the release of granulocyte-macrophage colony stimulating factor from cultured human bronchial epithelial cells. Naunyn Schmiedebergs Arch Pharmacol 357:472- 475.

***Corresponding author:** Parth Patel, Department of urologist in Santa Monica, California, United States, E-mail: drparthpatel122@gmail.com

Received: 04-May-2022, Manuscript No: jcidp-22-63959, **Editor assigned:** 06-May-2022, PreQC No: jcidp-22-63959 (PQ), **Reviewed:** 20-May-2022, QC No: jcidp-22-63959, **Revised:** 25-May-2022, Manuscript No: jcidp-22-63959 (R) **Published:** 30-May-2022, DOI: 10.4172/2476-213X.1000150

Citation: Cunha-Neto E, Rodrigues MM (2022) Immunology and Infection by Protozoan Parasites. J Clin Infect Dis Pract, 7: 150.