Opinion
Volume 13:7, 2022

Journal of Cytology & Histology

ISSN: 2157-7099 Open Access

Microbiological Studies in Clinical Pathology

Dipak K. Dube*

Department of Medicine, SUNY Upstate Medical University, Syracuse, NY 13210, USA

Introduction

In medical microbiology, microorganisms are identified to diagnose infectious disorders and to predict the likely outcome of various therapeutic approaches. Mycobacteria, fungi, viruses, and parasites are some of the major types of life. To distinguish a true disease-associated infection from colonisation with normal flora or other conditions, such as malignancies, inflammatory disorders, or autoimmune disorders, each of which has its own therapies and prognoses for the patient, microbiological methods combined with clinical symptoms, additional laboratory tests, and imaging techniques are used in combination. Traditional microscopy and culture techniques are used in laboratories along with a constantly expanding collection of molecular and proteomic tools.

A branch of medical science involved with the prevention, diagnosis, and treatment of infectious diseases is known as medical microbiology, a sizable subset of microbiology that is applied to medicine. Additionally, this branch of science investigates numerous clinical uses of microorganisms for enhancing health. Bacteria, fungi, parasites, viruses, and one particular infectious protein known as a prion are the four types of microorganisms that cause infectious disease [1].

Description

Nuclear membranes are absent in bacteria, which are unicellular creatures. A lipid-containing outer membrane and a thick or thin peptidoglycan layer may be present in the cell wall. Mycoplasma is one pathogenic bacterium that doesn't have a cell wall. The presence of mycolic acid in the cell wall of mycobacteria has an impact on their virulence, stability, and detection techniques. Eukaryotic organisms known as fungi can take the form of filamentous mould or unicellular yeast. Mold can only reproduce sexually, but yeast can only reproduce asexually. There are two varieties of the dimorphic fungal class: a yeast form and a mould form. Significant pathogens include the dimorphic moulds Histoplasma, Blastomyces, and Coccidioides [2].

Eukaryotic microorganisms, or parasites, come in a huge variety of forms. While some parasitic worms are very huge, protozoa are rather little. Depending on their life cycle, parasites might go through a number of developmental stages in one or more intermediate animal hosts before infecting the target host. Knowing a patient's residence, travel history, lifestyle, pets, and potential exposures are essential components of any medical evaluation when developing a parasite differential diagnosis because parasitic diseases are particularly geographically specific [3].

Numerous diverse microbes invade people in organ-specific ways. We benefit from normal flora's functions in the metabolism of food, defence against pathogenic bacteria, synthesis of growth hormones, and regulation of the innate and adaptive immune system's interactions with the environment. When assessing the outcomes of a good culture, it is critical to take the typical flora into account. Some types of natural flora are very infrequently infections, and doctors wouldn't treat them. An illustration would be the majority of Corynebacteria from a wound/skin samples and Lactobacillus from a vaginal specimen. All further organisms found are pathogens and need to be treated. Examples include Mycobacterium tuberculosis, Bacillus anthracis, Plasmodium, the rabies virus, and Bacillus anthracis.

Understanding the risk to the laboratory expert while handling the samples is crucial while evaluating human diseases. The four biosafety levels (BSLs) increase the level of precaution as the risk does. BSL1 involves substances that are not routinely known to afflict healthy persons with sickness. The majority of regular tasks conducted in the hospital laboratory that include handling chemicals linked to human disease are done so under BSL2 protection. Any steps that result in splashing or aerosolization require the use of biosafety cabinets for physical containment equipment. As directed by the protocol, personal protective equipment such as lab coats, gloves, and face shields are utilised as necessary.

Approximately one-third of all global deaths are caused by communicable diseases, adding to the immense burden of infectious diseases. Even while infectious disease morbidity and mortality have decreased dramatically over the past century, especially in affluent nations, the proportion of infectious disease deaths relative to many other categories of human disease is still fairly high. Diseases that have plagued mankind for centuries, like cholera and tuberculosis, continue to infect and kill a large number of people each year. Despite a global drive to do so, the polio virus still needs to be removed from the list of diseases that cause human illness. While persistent infectious illness causes are still widespread, newly emergent infectious diseases make treating patients more difficult for doctors [4,5].

Conclusion

Infections that spread through the healthcare system are known as nosocomial infections. They are exceedingly prevalent and frequently linked to the most resilient species, making therapy

***Address for Correspondence:** Dipak K. Dube, Department of Medicine, SUNY Upstate Medical University, Syracuse, NY 13210, USA, E mail:dipakdube@gmail.com*

Date of Submission: 02 July, 2022, Manuscript No. JCH-22-78498; **Editor Assigned:** 04 July, 2022, PreQC No. P-78498; **Reviewed:** 16 July, 2022, QC No. Q-78498; **Revised:** 21 July, 2022, Manuscript No. R-78498; **Published:** 26 July, 2022, DOI: 10.37421/2157-7099.2022.13.645

challenging. A healthcare facility's infection control team keeps an eye on nosocomial illnesses, ensures that isolation protocols are followed, and looks into possible outbreaks or organism transmission within a facility. The diagnostic microbiology laboratory conducts tests for observation and for the examination of transmission. The most frequent nosocomial infection is urinary tract infection, which is followed by respiratory tract infections and surgical site infections, then bloodstream infections. Hospitals are now required to participate in the tracking of nosocomial infections under new hospital monitoring systems like the National Healthcare Safety Network.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Degos, R., and J. Civatte. "Clear-cell Acanthoma* Experience of 8 Years." Br J Dermatol 83 (1970): 248-254.
2. Akiyama, M., K. Hayakawa, Y. Watanabe and T. Nishikawa. "Lectin-binding sites in clear cell acanthoma." J Cutan Pathol 17 (1990): 197-201.
3. Ohnishi, T., and S. Watanabe. "Immunohistochemical characterization of keratin expression in clear cell acanthoma." Br J Dermatol 133 (1995): 186-193.
4. Petzelbauer, Peter, and Klaus Konrad. "Polypous clear cell acanthoma." Am J Dermatopathol 12 (1990): 393-395.
5. Langer, Kurt, Stefan Wuketich and Klaus Konrad. "Pigmented clear cell acanthoma." Am J Dermatopathol 16 (1994): 134-139.

How to cite this article: Dube, Dipak K. "Microbiological Studies in Clinical Pathology." *J Cytol Histol* 13 (2022): 645.