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INTERVIEW

Pathology of leprosy and the importance of histopathological diagnosis: an interview with Dr. Cleverson Teixeira Soares[1]

Patologia da hanseníase e a importância do diagnóstico histopatológico: uma entrevista com Dr. Cleverson Teixeira Soares

Patología de la lepra y la importancia del diagnóstico histopatológico: una entrevista con el Dr. Cleverson Teixeira Soares

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Hansenologia Internationalis Journal interviewed Dr. Cleverson Teixeira Soares pathologist, and head of the Pathological Anatomy Laboratory at the Lauro de Souza Lima Institute, Bauru, São Paulo, Brazil.

Dr. Cleverson is the author of the book *Histopathological Diagnosis of Leprosy**, published in 2021 by Bentham Books, and also published relevant articles in national and international scientific journals, with an impact on the fields of pathology and leprosy.

In the text, the interviewee discusses his professional career, the challenges of

understanding leprosy in its multiple clinical forms, and how classical and molecular pathology have contributed to the construction of knowledge about this complex disease.

VNBS – Could you start by introducing yourself, and telling us a little bit about your background and what you have done so far?

CTS – I graduated in Medicine at the University of Brasília (UnB) and then did my residency in Pathology and Ph.D. at the State University of São Paulo (UNESP-Botucatu). I currently work at the Lauro de Souza Lima Institute as a pathologist responsible for part of the general routine of anatomopathological diagnosis. My main focus is the management of leprosy cases and leprosy research in the field of pathology. I also work as a pathologist at the Pathological Anatomy Laboratory – ANATOMED in Bauru.

VNBS – Why did you choose a career in medicine as a pathologist?

CTS – I decided to study pathology towards the end of my undergraduate studies, probably influenced by the realization of the importance of pathology in different areas of medicine. In college, the anatomy clinic meetings were fascinating. Everyone would get together to discuss the most challenging cases, and the role of the pathologist was to try to explain some of these questions through the histopathologic features present in biopsies or even necropsies. The role of the pathologist intersects with several areas of medicine and other professions, making it a crucial activity that involves both diagnosis and research efforts. During my undergraduate studies, I also learned to enjoy research, and pathology gradually became a path I wanted to follow. To this day, I don't know what made me choose pathology, but the important thing is that I think I made the right choice.

VNBS – And where does the interest in leprosy come from?

CTS – It was by chance. I was invited by Dr. Raul Negrão Fleury to work with him in the pathology laboratory of the Lauro de Souza Lima Institute. I was responsible for diagnosing cases not related to leprosy. Over time, I also began to analyze some routine leprosy cases and discuss them with Dr. Raul, who was an exceptional specialist in leprosy pathology. Our discussions led to the realization that leprosy is a complex and challenging disease. Gradually, I became more involved with the disease and immersed myself in the routine of diagnosis and research in leprosy pathology.

VNBS – What is special about leprosy in terms of pathology?

CTS – Leprosy is a spectral, long-lasting disease and is highly complex from a clinical, histopathologic, and molecular point of view. The diverse clinical

manifestations of leprosy can mimic different types of diseases, both neoplastic and non-neoplastic, infectious and non-infectious. This clinical diversity is also accompanied by different histopathologic features, making it extremely rich and challenging. In these aspects, pathology plays a central role in understanding the pathophysiology of leprosy and its reactional phenomena, as well as in evaluating the effectiveness of treatment and recurrence.

VNBS – What is the most important contribution of a pathologist to leprosy patients?

CTS – The pathologist can help leprosy patients in many ways. His greatest contribution is to make a correct and detailed diagnosis of the disease. Not only to confirm the presence of leprosy features in a given sample but also to classify it within the whole spectrum of the disease and also to identify possible associated reactional phenomena, if they are present in that sample. In other words, extracting the maximum amount of information about the disease from the biopsy samples helps to determine the most effective form of treatment, thereby increasing the possibility of a cure. In most cases, the probability of success is greater when the diagnosis of leprosy is made based on its clinical features combined with the histopathologic diagnosis. It's important to remember that leprosy can mimic many other diseases and many cases initially suspected of being leprosy turn out to be other diseases, and vice versa.

VNBS – What are the main challenges to correct histopathological diagnosis of leprosy?

CTS – A detailed histopathological diagnosis of leprosy depends on three factors: good clinical information, histopathological features observed in biopsy specimens, and bacilloscopic evaluation of the histologic section. To enable the pathologist to make an accurate diagnosis, detailed clinical information about the characteristics of the lesions, the results of any tests the patient has undergone, and personal and family history data are essential. Often this information is either not available or is not sent for evaluation along with the histopathologic characteristics of the lesion, making the histopathologic diagnosis difficult. On the other hand, expertise in leprosy pathology seems to be decreasing worldwide. New pathologists have likely received insufficient information about the histopathology of the disease.

This is a serious problem, not only for the diagnosis of leprosy, but also for the development of research related to diagnosis, the search for new drugs to treat leprosy and its reaction conditions, and the guidance of public policies on leprosy.

VNBS – How has pathology helped to understand the evolution of leprosy?

CTS – Pathology plays a crucial role in understanding leprosy. The classification that we pathologists should use is the Ridley and Jopling classification from the 60s and 70s. It is a clinicopathological classification that correlates the patient's immunity with histopathologic features and clinical data. Leprosy, being a long-lasting and spectral disease that can persist for decades, has a slow and continuous evolution, resulting in different forms of clinical presentations. In addition to the disease itself, during its evolution or after the start of treatment patients often develop reactional phenomena, that overlap with the underlying disease. These are phenomena of exacerbation of the patient's immunological response to *M. leprae* bacillary antigens. Little is known about the mechanisms of disease progression, the factors involved in triggering the reaction processes, and why many patients relapse, even after adequate treatment. Pathology will play an important role in elucidating these points.

VNBS – And has molecular pathology made relevant contributions?

CTS – Molecular pathology is very important for everyone working with leprosy. For both diagnosis and research. Various molecular techniques have proven to be important in understanding the pathophysiological phenomena of the disease. They play an important role in diagnosis by detecting the bacillus in tissues and body fluids, and in identifying resistance to various drugs used to treat leprosy. Molecular techniques have also allowed the identification of a large number of genes involved in the pathophysiological mechanisms of the disease. The role of these genes in the development and progression of the disease is, largely unknown. Many of these identified genes could become new therapeutic targets, improving the treatment of the disease and its reactional phenomena and enabling its prevention.

VNBS – What would you say was the most memorable and emotional moment of your career?

CTS – Regarding my leprosy activities, there are some aspects that I consider important. I would like to highlight two published works on the expression of messenger RNA and microRNA in skin lesions of leprosy patients, both evaluating all human genes, and the publication of an authored book on the histopathologic diagnosis of leprosy, covering the histopathologic characteristics of leprosy forms, its reactional phenomena, special forms of disease presentation, and differential diagnoses. Both required several years of work and dedication, with the invaluable contribution of many individuals, without whom their completion would not have been possible. This is information and knowledge that I consider important, and the fact that it is published allows other people,

researchers, and health professionals working with leprosy, to have access to this data. I hope it will help them to develop new insights and improve their understanding of leprosy. So it is a long, daily, team effort, and the results have been and continue to be very satisfying. From this point of view, the result can be considered memorable and moving for all those who participated in it.

VNBS – What questions remain in leprosy that pathology could help answer?

CTS – Knowledge of leprosy pathology is still very incipient. Few pathologists study leprosy, which results in limited knowledge in this field to help understand the pathophysiological mechanisms of the disease. Leprosy is an extremely complex disease from a clinical, pathological, and molecular point of view. It can mimic different types of diseases, mainly inflammatory diseases (such as rheumatic diseases), numerous infectious diseases, and also neoplastic diseases. Thus, a disease with these characteristics raises many more questions to be answered than there are certainties in the various fields that deal with it. Fundamental questions remain to be answered. How does the disease progress? What mechanisms allow *M. leprae* to parasitize almost every tissue and cell in the human body? How are reactions triggered? There are some important and unanswered questions, and pathology can be crucial in elucidating them.

VNBS – Has studying leprosy changed you as a professional or as a person?

CTS – Yes. Leprosy is a disease that you need to study continuously to understand a little bit, and preferably be part of a service or team that deals with many cases so that you can see the different nuances of the disease. It's a challenging disease and no matter how much you think you understand it, new cases appear every day that raise more questions. A disease that tests your limits every day can never be underestimated. In this sense, the daily contact with leprosy has taught me a lot about life and helped me to understand many other diseases.

VNBS – Finally, do you have anything to say to a young pathologist who has the opportunity to work with or study leprosy?

CTS – If you are a young pathologist and dream of great challenges, studying leprosy pathology could be an option. At the moment, I would say that the knowledge of leprosy pathology is just above sea level and the goal is to reach the summit of Everest. There is a long road of knowledge to travel and pathologists could play a crucial role at each milestone. Leprosy is a major public health problem in Brazil, and pathology plays an important role in addressing this problem, both in diagnosis and research. Leprosy is an infectious disease caused

by a bacterium (*M. leprae*), but its progression mechanisms can be observed in different types of diseases, especially neoplasms. In other words, studying leprosy from a histopathological point of view can provide important knowledge about other diseases. It is also an opportunity to contribute to a disease that requires the expertise of pathologists to understand its pathophysiological mechanisms, to develop new drugs for its treatment, to deal with reaction conditions, and to address a public health problem that affects our entire society, especially the most vulnerable.

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NOTE: ** The book Histopathological Diagnosis of Leprosy can be purchased in electronic or print format from the publisher's website, link: https://benthambooks.com/book/9781681087993/*