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MONDAY, MAY 5, 2014

Understanding the Importance of Biofilms In Treating Chronic Sinusitis; By Andrew Pugliese, M.D



According to the CDC chronic rhinosinusitis CRS affects approximately 33 million people annually. In past writings, I discussed the complexities of CRS in that it involves both the anatomy and physiology of the sinuses. However, research over the past decade has shown besides anatomy and physiology, the infectious agents themselves can also add a whole layer of complexity to CRS that is just beginning to be understood.

When dealing with chronic infectious diseases in general, it must be understood that there is a microcosmic war that is going on in the patient that is suffering. What has to be appreciated is that these infectious agents will create an environment favorable to them thriving while creating resistance not only to the host's defenses, but to medical modalities being prescribed such as antibiotics.

It is now becoming well understood that with chronic infections such as CRS, bacteria have the ability to form an organic matrix made up of polysaccharides, protein and even DNA. However, to say that this organic matrix forms a protective shield for the bacteria is a gross understatement. Instead of a shield this organic matrix or glycocalyx behaves more like a 16th century fortress able to withstand months of an enemy's siege.

According to John Costerton's work in 2003 on bacterial biofilms this glycocalyx is a mosaic of bacterial colonies that possess varying phenotypes and different physiochemical properties. Not only does this

protect the bacterial inhabitants, but it also serves to modulate the microenvironment of these colonies through its numerous canals via a process of interbacterial signaling called quorum sensing.

Just like in the Siege of Vienna of 1529, Viennese defenders were able to detect the subterranean activities of the Ottoman sappers and miners who were attempting to blow up the cities walls with large amounts of gun powder. The defenders were able to sink counter mines in the precise locations trapping and killing many of the enemy. This is ferocious stuff, but no less ferocious than the war that is going on the sinus cavities of those suffering with CRS.

This is quite the departure from the conventional thinking of chronic infection therapy from when I was training in infectious disease. Back then, it was thought that bacterial infections were cause by isolated bacterial types that would respond to antibiotic therapy. Unfortunately as time goes on and more and more patients fail conventional therapy, it is becoming better understood that bacterial behavior is much more complex in chronic infections than initially thought.

One important breakthrough for understanding the complexity of chronic infections is more advanced testing for bacteria than what was previously available. Even up until today, many clinicians rely on the old Pasturian method of detecting which bacteria is causing infection; however, in many instances the one species may have dominated the culture therefore missing other organisms that could be contributing to the process. Today we have molecular DNA analysis to help us determine the causative agents.

This is particularly important in CRS. In many instances both the clinician and patient are frustrated because the cultures done through conventional methods report no growth, despite the fact the internal endoscopic exam shows inflammation and purulence. It is my belief that many of these patients have an association with allergic fungal sinusitis, which is even more difficult than bacteria to culture conventionally.

As of right now, myself and my colleagues are using this advance testing to get a better understanding of the microorganism make- up of patients who suffer with CRS. My suspicion is that there are many more patients who have a fungal component to their CRS than has been originally thought. As far as addressing the biofilm, there are several agents that can be used in order to breakdown the fortress walls.

This advance testing hopefully will help those that have been suffering for years with CRS but have had only very few answers.

Posted by [Dr. Andrew Pugliese](#) at [9:24 AM](#)

Dr. Andrew Pugliese

Story

Tagline:

MD talking about the world of #sinusitis #Sinus #Blogger #infectiousdisease

Introduction:

I am a passionate sinus blogger, published author, public speaker, triple board certified MD, President of Sinus Solutions LLC. & Pioneer in the non-surgical treatment of acute and Chronic sinusitis. I write informative Sinus Blogs discussing case studies, various sinusitis infections and treatments, and sinus related situations.

Bragging rights:

Dr. Pugliese recieved his doctorate in medicine from St. George's University School of Medicine and completed his Infectious Disease Fellowship at Winthrop University Hospital, Mineola, N.Y. He is triple board certified in Internal Medicine and Infectious Disease. Dr. Pugliese is a member of several professional organizations, including: Infectious Disease Society of GA, Infectious Disease Society of America, American College of Physicians and American Medical Association.

Work

Occupation

Triple Board Certified MD in Internal Medicine and Infectious Disease

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*To learn more about molecular DNA analysis to help you determine causative agents go to:

www.pathogenius.com

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