

Family Medicine Clerkship
Plain Language Summary

Title: Procalcitonin: A clinical tool for determining etiology and necessity of antibiotics in community acquired pneumonia.

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Plain Language Summary:

What is PCT?

Many recent clinical trials have shown that procalcitonin (PCT) is helpful in the clinical evaluation for the potential to develop a serious bacterial infection. There have been over twenty well designed trials studied in patients who presented to emergency rooms, primary care clinics or who were admitted to intensive care units with symptoms concerning for pneumonia or infections of the blood. The PCT test is approved by the Food and Drug Administration (FDA) as a tool for your physician to determine the risk of bacterial infection. Studies have shown that PCT tests are most useful on the first day the patient presents to the doctor. Most often your doctor will order PCT with many other blood tests in conjunction with medical imaging to help them form a clinical suspicion for a serious bacterial infection.

Due to poor evidence PCT is rarely used throughout the illness to monitor antibiotic therapy in people with suspected bacterial infections of the blood.

How to interpret PCT levels?

A PCT less than 0.25 in a sick person represents a very low risk of having a bacterial blood infection. It takes about 6-8 hours for the PCT level to be elevated so having a low PCT in the very beginning of an illness may not exclude a bacterial infection. PCT is made in the liver so patients with poor functioning livers may not have elevated PCT levels despite having a bacterial infection. A low PCT often suggests that a patient's symptoms are being caused by other problems such as transplant problems, viral infections or pain from trauma.

A PCT that is greater than 0.25 suggests a high probability that your symptoms are caused by a bacterial infection. Higher levels of PCT have also been suggested to predict the risk of progression to severe infection. Moderate elevations in PCT levels have also been associated with some autoimmune diseases. Therefore it is recommended that PCT levels be viewed as part of the whole picture when making a diagnosis and determining whether to begin antibiotics.

Why use this test?

Often times the distinction between bacterial, viral and other causes of a patient's symptoms are difficult to identify. PCT makes identification of a systemic bacterial infection (such as bacterial pneumonia) much less likely when it is not elevated. This is important for the patient and society as a whole because the inappropriate use of antibiotics, especially when the illness is not caused by bacteria, can lead to side effects from unnecessary antibiotics, delay proper treatment, can lead to the promotion of growth

of antibiotic resistant bacteria and also promote the growth of dangerous bacteria such clostridium difficile.

The data supporting the use of PCT currently is most strong for the evaluation of bacterial versus viral pneumonia. However, it is important to know that there have been and are many more studies currently evaluating the usefulness of PCT in other illnesses. Thus you may be hearing about using PCT in other illnesses in the future.

Additional Resources:

American Thoracic Society Journal

www.atsjournals.org (Concise Clinical Review: Management of CAP in Adults)

Archives of Internal Medicine

www.archinternmed.com (Review Article: Procalcitonin Algorithms for Antibiotic Therapy Decisions)

Aetna

http://www.aetna.com/cpb/medical/data/700_799/0771.html

Lab Tests Online

<http://labtestsonline.org/understanding/analytes/procalcitonin/tab/test>

Key Words:

Procalcitonin

Community acquired pneumonia

Antibiotics

Bacterial infection

Blood infection

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