

Cover Page

Effect of C-reactive protein on chest X-ray interpretation: it's more complicated.

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Word count: 386

No Tables of Figures

7 references

To the Editor: The manuscript by Barak-Corren and colleagues concludes that clinicians interpret the same CXR differently based on the CRP.¹ In fact, it is well recognized that there is a degree of subjectivity involved in the interpretation of chest X-rays. In an evaluation of the World Health Organization criteria for diagnosing pneumonia from a radiograph, this subjectivity was apparent in the lack of uniformity in interpretation, particularly for patchy and perihilar changes.² A critical commentary on chest radiographs for childhood pneumonia agreed that a negative chest film, i.e., the absence of consolidation, excludes pneumonia, but the presence of areas of consolidation alone should not dictate treatment.³ Over-diagnosing of pneumonia is common, especially among children under age 6. At a university hospital outpatient clinic in Turkey, 126 children diagnosed as pneumonia and prescribed antibiotics were subsequently reevaluated in a Pediatric Chest Disease Department of the same hospital. That reevaluation determined that the diagnosis of pneumonia was not supported in 40% of the patients, and antibiotics were judged to be unnecessary in 85%.⁴ An observational study at four hospitals in India examined chest films of 516 children under 5 years of age and found that 43% had what was called “wheezy disease” consistent with asthma or bronchiolitis, neither of which requires antibiotics and perhaps not even.⁵

The question is not whether the child has pneumonia, as defined by radiologic imaging, but does the child have pneumonia due to bacterial infection. To identify those with bacterial pneumonia from the majority with viral etiology, efforts have been made to examine the value of biomarkers, white blood cell count and differential, C-reactive protein (CRP), and procalcitonin. Of those inflammatory markers, CRP values are significantly higher in the presence of bacterial infection, but some degree of overlap has been seen. Procalcitonin is proposed as the most useful biomarker for identifying those with bacterial infection.⁶ Since viral pathogens are the major

causes of pneumonia, antibiotic antibiotics therefore should be considered primarily after careful clinical assessment of how sick the child appears, the presence of fever, an elevated CRP, an elevated procalcitonin, and a radiologic image of a distinct lobar or lobular infiltrate.⁷

In summary, pneumonia is a generic term for inflammation of the lung parenchyma with consolidation. A chest x-ray is a shadow-gram that can show consolidation, but cannot identify cause of the consolidation.

References

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