İnfeksiyon Hastalıklarının Tanısında Eski Biyolojik Göstergelerin Yeri

Prof. Dr. Firdevs Aktaş

Kazım Hoca'nın anısına

Enfeksiyon Hastalıklarında özgül olmayan laboratuvar testlerinin klinik önemi

- Lökositoz
- Lökopeni
- Lenfositoz
- Lenfopeni
- Monositoz
- Atipik lenfositoz
- Eozinofili
- Bazofili

Enfeksiyon Hastalıklarında özgül olmayan laboratuvar testlerinin klinik önemi

- Anemi
- Eritrofagositoz
- Trombositopeni
- Trombositoz
- Pansitopeni
- ESR
- CRP
- ALP,AST, ALT,bilirubin , LDH,RF

Özgül olmayan laboratuvar testleri

- Hızlı testlerdir
- Deneyim ve özel laboratuvar donanımı gerekmez
- Enfeksiyonlara acil yaklaşım
- Kısıtlı laboratuvar olanaklarında kullanılır
- Kriz yönetiminde işe yarar

Acil Serviste Enfeksiyon Hastalıklarının Tanısı(Mikrobiyolojik testler dışında)

- Kan Sayımı (BK)
- TİT
- Kan kimyası
- Akut faz reaktanları
  - ESR
  - CRP

- 860 acil servis hastasının 128 inde >11000 lökosit saptanmış.
- Enfeksiyon ve enfeksiyon dışı hastalıklar arasında anlamlı bir farklılık bulunmamış

Infectious Disease in Emergency Medicine kitabından

- 40° C ateşi olan >15000 olan çocukların yarısı bakteriyemik
- Ancak bakteriyemik çocukların yarısında BK <15000
- Bakteriyemik hastaların % 26-40 ında BK <10000
- Bakteriyel enfeksiyon saptanan 121 ateşli erişkin hastanın %56 sında >BK 15000
- % 32 sinde BK <15000

Infectious Disease in Emergency Medicine kitabından

- “Lökositoz enfeksiyon tanısında önemli bir gösterge, ancak tedavi yaklaşımını tek başına belirleyemez”
- Belirgin nötrofilik lökositoz hastalık ciddiyetini gösterir
- Acil serviste % 30 mortalite ile giden kötü prognozu gösterir

Lökositozun enfeksiyon dışı nedenleri

- İnflamasyon
- Emosyonel ve fiziksel stres
- Malignensi
- Kan kaybı
- Miyeloproliferatif hastalıklar
- Epinefrin, lityum ve steroid gibi ilaçlar
- Epileptik atak
- Gebelik
- Cerrahi girişim(36 saat içinde)
- Egzersiz
- Orak hücreli anemi ve orak hücre krizi
- Diyabetik ketoasidoz
- Travma
- Sigara kullanımı
- Acil yaklaşım gerektiren hastalık

Infectious Disease in Emergency Medicine kitabından

Kan Yayması

Kan dolaşımı enfeksiyonlarında

- Nötrofillerde sitoplazmik vakuolizasyon
  Duyarlılık % 90.5
- Nötrofillerin artışı
  Duyarlılık % 66.7
- Bant formlarında artma
  Duyarlılık % 72.0
  p>0.001

Otomatize sistemler tanımlayamaz

Kan Yayması

- Kanda >1000000/mL mikroorganizma varsa kan yaymasında görülebilir.
- Kanda en az 4x 100000 mikroorganizma varsa buffy coat yaymasında görülebilir.
- Böyle yüksek oranların bulunması çok nadir
- Ancak saptanırsa mortalite yüksektir.

  (> % 50)

Splenektomili hastalarda , yeni doğanda araştırılmalı

Anemi

- Enfeksiyon hastalığında anemi varsa hastalık başlangıcının eski olduğu düşünülür.
- Tüberküloz
- HIV
- Subakut bakteriyel endokardit

İdrar incelemesi

- Piüri
- Lökosit silindiri (pyelonefrit)
- Alkalen pH (Proteus gibi üreyi parçalayan bir bakteri varlığı?)
- 40 lık objektifte 1-2 lökosit
- 100 lük objektifte bakteri

>100000 koloni/mL bakteriyi gösterir.

ESR

- Fibrinojen ve α-2 ve α-1 globulin konsantrasyonlarında artış ESR yükselmesine yol açan en önemli nedendir.
- Organik bir hastalığı göstermesi bakımından duyarlılığı çok yüksektir.
- Özgüllüğü düşüktür.

ESR (>100mm/s)

Enfeksiyon

- Subakut bakteriyel endokardit
- Apse
- Osteomiyelit

Kollagen Doku Hastalıkları

- Polimiyalji romatika
- Devhücreli arterit
- RA
- SLE

Malignite

- Multiple miyeloma
- Lösemi
- Lenfoma
- Kanser

İlaç ateşi

Ayırıcı Tanı

ESR (≥ 50mm/s)

- Kolanjit
- PİH
- Apandisit
- Piyelonefrit
- Stroptokoksik farenjit
- Trişinoz

ESR (<50mm/s)

- Kolesistit
- Over kisti
- Kolesistit
- Sistit
- IM farenjiti
- Polimiyozit

Ayırıcı Tanı

ESR (≥ 50mm/s)

- RA
- Kanser
- Miyeloma

- Mide kanseri
- MI
- Septik artrit
- Kalça/ diz protez enfeksiyonu

ESR (<50mm/s)

- Osteoartrit
- Kaşeksi
- Benign monoklonal gamopati
- Gastrik ülser
- Angina
- Sinovit
- Kalça/ diz protez gevşemesi

Akut faz reaktanları

- α-1 antitripsin
- Haptoglobulin
- Seruloplazmin
- α-1 glikoprotein
- C reaktif protein (CRP)

CRP

- 1930 yılında pnömokoksik pnömonili hastaların serumunda *Streptococcus pneumoniae* C polisakkaridini presipite eden bir protein olarak tanımlandı.
- Hepatositlerden olaydan 4-6 saat içinde sentezlenir.

CRP

- ESR gibi organik bir hastalığı göstermesi bakımından duyarlılığı çok yüksektir.
- Özgüllüğü düşüktür.
- Doku hasarı ya da inflamatuvar olaya yol açan enfeksiyon ya da enfeksiyon dışı bir hastalığı gösterir

C-Reactive Protein in Virus Infection

W. L. PARKER, M.D., W. STACKIW, B.Sc. and
J. G. WILT, M.D.,* *Winnipeg, Man.*

THE reaction of any warm-blooded animal to a noxious stimulus is invariably reflected by a quantitative change in the serum protein fractions.[1] Such changes are non-specific in respect to the inciting agent. They are reflected by many phenomena, one of these being an increased erythrocyte sedimentation rate (ESR). Measurement of the ESR has wide clinical use as a non-specific index of the presence of active disease and a means whereby the progress of such disease may be followed.

Closely allied to the foregoing phenomena is the appearance in the serum of an unusual protein, the C-reactive protein (CRP)[2] which derives its name from its ability to precipitate with the C-somatic polysaccharide of the *Diplococcus pneumoniae*, in the presence of calcium ions. It has many unusual properties of which the following are pertinent to this communication:

(a) CRP is a protein which, when present in serum, appears to be closely associated with the serum lipids. In its lipid-free form, it is antigenically distinct from any protein found in the sera of normal healthy humans.[3] In this respect demonstration of the presence of CRP in the serum has added significance over and above the finding of an elevated ESR. The ESR is closely associated with blood fibrinogen levels and may be influenced by changed physiological states in the absence of any actual tissue-cell damage.[4]

(b) The appearance of CRP in the serum can be detected within a few hours (18 to 24) after the onset of any tissue insult.[5] It occurs at a time considerably before the ESR, white blood cell count, or even body temperature shows any significant change. This factor constitutes the basis of a simple laboratory aid, often little utilized, in the early viral infections.[6,7,8] It is reported to be present less frequently in viral infections, particularly respiratory infections, than in bacterial infections.[9] In the majority of these reports, the viral etiology of the infections has been suggested by a clinical diagnosis, or by viral diagnostic methods now considered to be non-specific.

It is the purpose of this communication to report the incidence in which CRP was shown to be present in the acute-phase sera of patients suffering from a variety of virus infections, diagnosed by specifically defined criteria. These diagnostic criteria have been outlined in full elsewhere,[10] and briefly are as follows:

1. Only those cases were chosen in which the clinical signs and symptoms were consistent with, and adequately explained by, a virus infection uncomplicated by any secondary bacterial infection or other harmful sequelae.

2. The specimens tested consisted of paired acute and convalescent sera from cases fulfilling the above criteria. A two-tube (fourfold) rise in complement-fixing, hemagglutination-inhibiting, or neutralizing antibodies was shown to exist between all such paired sera. In addition, a virus was isolated from many of the patients at an appropriate stage, early in the disease.

Serum specimens were stored at –25° C. for periods ranging from one month to three years before testing for the presence of CRP. All sera were inactivated at 56° C. for 30 minutes before the performance of any of the serological tests described.

MATERIALS AND METHODS

Specimens were prepared for isolation by

ARALIK 2001, WASHINGTON

- American College of Chest Physicians (ACCP)
- Society Of Critical Care Medicine (SCCM)
- American Thoracic Society (ATS)
- European Society Of Intensive Care Medicine (EICM)
- Surgical Infection Society (SIS)

- ULUSLARARASI SEPSİS TANIMLARI KONFERANSI ARALIK 2001’ DE WASHİNGTON’ DA TOPLANDI
- SEPSİS FİZYOPATOLOJİSİNDEKİ GELİŞMELER VE 1992 TANIMLARI GÖZÖNÜNDE BULUNDURULARAK, SEPSİS TANIMI YENİDEN GÖZDEN GEÇİRİLDİ

SEPSİS TANIM KRİTERLERİ

İNFLAMASYON GÖSTERGELERİ

- Lökositoz (Beyaz küre sayımı > 12000 / mm^3)
- Lökopeni (Beyaz küre sayımı > 4000 / mm^3)
- Nötrofil bant formlarının > %10 olması
- Plazma C-reaktif protein > 2 sd
- Plazma prokalsitonin > 2 sd

Available online http://ccforum.com/content/11/4/R92

Research

Open Access

Usefulness of C-reactive protein in monitoring the severe community-acquired pneumonia clinical course

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Received: 5 Jun 2007 Revisions requested: 4 Jul 2007 Revisions received: 10 Aug 2007 Accepted: 28 Aug 2007 Published: 28 Aug 2007

Critical Care 2007, 11:R92 (doi:10.1186/cc6105)
This article is online at: http://ccforum.com/content/11/4/R92

Abstract

Background The aim of the present study was to evaluate the C-reactive protein level, the body temperature and the white cell count in patients after prescription of antibiotics in order to describe the clinical resolution of severe community-acquired pneumonia.

Methods A cohort of 53 consecutive patients with severe community-acquired pneumonia was studied. The C-reactive protein levels, body temperature and white cell count were monitored daily.

Results By day 3 a C-reactive protein level 0.5 times the initial level was a marker of poor outcome (sensitivity, 0.91; specificity, 0.59). Patients were divided according to their C-reactive protein patterns of response to antibiotics, into fast response, slow response, nonresponse, and biphasic response. About 96% of patients with a C-reactive protein pattern of fast response and 74% of patients with a slow response pattern survived, whereas those patients with the patterns of nonresponse and of biphasic response had a mortality rate of 100% and 33%, respectively ($P < 0.001$). On day 3 of antibiotic therapy, a decrease in C-reactive protein levels by 0.31 or more from the previous day's level was a marker of good prognosis (sensitivity, 0.75; specificity, 0.85).

Conclusion Daily C-reactive protein measurement after antibiotic prescription is useful in identification, as early as day 3, of severe community-acquired pneumonia patients with poor outcome. The identification of the C-reactive protein pattern of response to antibiotic therapy was useful in the recognition of the individual clinical course, either improving or worsening, as well as the rate of improvement, in patients with severe community-acquired pneumonia.

- 2007 yılına ait bu çalışmada
- Antibiyotik başlandıktan sonra CRP nin günlük ölçümünün ciddi toplum kökenli pnömonilerin izleminde güvenli bir gösterge olduğu belirtiliyor.
- Tedavinin 3. gününde CRP de düşüş saptanmaması başarısız yanıt ve klinik kötüleşme ile ilişkili.

The Royal College of Surgeons of England

EMERGENCY SURGERY

Ann R Coll Surg Engl 2006; 88: 27–32
doi 10.1308/003588406X83041

Patients with clinical acute appendicitis should have pre-operative full blood count and C-reactive protein assays

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ABSTRACT

INTRODUCTION The role of inflammatory markers in the diagnosis of acute appendicitis has not been clearly defined. The aims of this prospective audit were to define the role of the serum markers of inflammation total white cell count, neutrophil count and C-reactive protein in the diagnosis of acute appendicitis with particular reference to the discrimination between uncomplicated and complicated appendicitis, and the prediction of abscess.

PATIENTS AND METHODS The author compiled a prospective database over a 13-month period of all appendicectomies performed. After five exclusions (three having no notes for review and two having confounding second morbidity in the presence of a normal appendix), the data relating to 75 patients were analysed.

RESULTS In patients judged on clinical grounds to require laparotomy for suspected acute appendicitis, white cell count and neutrophil count distinguish acute appendicitis from normal appendices when used as categorical variables, though they do not reflect the presence of abscess. C-reactive protein neither distinguishes appendicitis from normal, nor predicts abscess when used as a categorical variable, though higher levels suggest abscess.

CONCLUSIONS Laboratory tests of the white cell count, neutrophil count and C-reactive protein are more effective in supporting a clinical diagnosis of acute appendicitis in patients with typical clinical features than in excluding the diagnosis.

KEYWORDS
Appendicitis – Inflammatory markers – Audit

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Supplementary measures designed to improve diagnostic accuracy include scoring systems,[1–5] computer-aided analysis,[6] laparoscopy[7,8] and radiological imaging.[9] Though novel inflammatory markers including interleukin-6 have been assessed with little additional merit,[10–12] the most

addresses the combination of clinical and laboratory factors on diagnosis. It would, however, be correct to state that, in combination, inflammatory markers appear to have a higher discriminatory capacity, although the results are based on only four papers.

- 2006 yılına ait bu makalede lökosit sayısı, nötrofil sayısı ve CRP ölçümünün akut apandisiti tanımlamada daha etkin olduğu
- CRP nin apselerde yüksek olmakla birlikte apse ve apandisit ayırımını yapamayacağı belirtiliyor.

Research

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Procalcitonin, lipopolysaccharide-binding protein, interleukin-6 and C-reactive protein in community-acquired infections and sepsis: a prospective study

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Received: 9 Jan 2006 Revisions requested: 25 Jan 2006 Revisions received: 10 Feb 2006 Accepted: 24 Feb 2006 Published: 28 Mar 2006

Critical Care 2006, 10:R53 (doi:10.1186/cc4866)
This article is online at: http://ccforum.com/content/10/2/R53

Abstract

Introduction Clinicians are in need of better diagnostic markers in diagnosing infections and sepsis. We studied the ability of procalcitonin, lipopolysaccharide-binding protein, IL-6 and C-reactive protein to identify patients with infection and sepsis.

Methods Plasma and serum samples were obtained on admission from patients with suspected community-acquired infections and sepsis. Procalcitonin was measured with a time-resolved amplified cryptate emission technology assay. Lipopolysaccharide-binding protein and IL-6 were measured with a chemiluminescent immunometric assay.

Results Of 194 included patients, 106 had either infection without systemic inflammatory response syndrome or sepsis. Infected patients had significantly elevated levels of procalcitonin, lipopolysaccharide-binding protein, C-reactive protein and IL-6 compared with noninfected patients ($P < 0.001$). In a receiver-operating characteristic curve analysis, C-reactive protein and IL-6 performed best in distinguishing between noninfected and infected patients, with an area under the curve larger than 0.82 ($P < 0.05$). IL-6, lipopolysaccharide-binding protein and C-reactive protein performed best in distinguishing between systemic inflammatory response syndrome and sepsis, with an area under the curve larger than 0.84 ($P < 0.01$). Procalcitonin performed best in distinguishing between sepsis and severe sepsis, with an area under the curve of 0.74 ($P < 0.01$).

Conclusion C-reactive protein, IL-6 and lipopolysaccharide-binding protein appear to be superior to procalcitonin as diagnostic markers for infection and sepsis in patients admitted to a Department of Internal Medicine. Procalcitonin appears to be superior as a severity marker.

Introduction

Sepsis is a common condition affecting an increasing number of hospitalized patients [1]. The prevalence of severe sepsis

C-reactive protein (CRP) has been used as a marker of infection for many years. Elevated CRP levels are seen in infection, in autoimmune disease, in cancer, in trauma and in surgery [5].

- 2006 yılına ait bu makalede CRP toplum kökenli enfeksiyonlar ve sepsis tanısında prokalsitoninden üstün bulunmuş
- Sepsis ciddiyetini tanımlamada ise prokalsitoninin daha değerli bir gösterge olduğu belirtiliyor.

Research

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Use of plasma C-reactive protein, procalcitonin, neutrophils, macrophage migration inhibitory factor, soluble urokinase-type plasminogen activator receptor, and soluble triggering receptor expressed on myeloid cells-1 in combination to diagnose infections: a prospective study

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Received: 1 Dec 2006 Revisions requested: 31 Jan 2007 Revisions received: 21 Feb 2007 Accepted: 16 Mar 2007 Published: 16 Mar 2007

Critical Care 2007, 11:R38 (doi:10.1186/cc5723)
This article is online at: http://ccforum.com/content/11/2/R38

Abstract

Introduction Accurate and timely diagnosis of community-acquired bacterial infections in patients with systemic inflammation remains challenging both for clinician and laboratory. Combinations of markers, as opposed to single ones, may improve diagnosis and thereby survival. We therefore compared the diagnostic characteristics of novel and routinely used biomarkers of sepsis alone and in combination.

Methods This prospective cohort study included patients with systemic inflammatory response syndrome who were suspected of having community-acquired infections. It was conducted in a medical emergency department and department of infectious diseases at a university hospital. A multiplex immunoassay measuring soluble urokinase-type plasminogen activator (suPAR) and soluble triggering receptor expressed on myeloid cells (sTREM)-1, and macrophage migration inhibitory factor operating characteristic curve (AUC) was used to compare their performance and those of the individual markers.

Results A total of 151 patients were eligible for analysis. Of these, 96 had bacterial infections. The AUCs for detection of a bacterial cause of inflammation were 0.50 (95% confidence interval [CI] 0.40 to 0.60) for suPAR, 0.61 (95% CI 0.52 to 0.71) for sTREM-1, 0.63 (95% CI 0.53 to 0.72) for MIF, 0.72 (95% CI 0.63 to 0.79) for PCT, 0.74 (95% CI 0.66 to 0.81) for neutrophil count, 0.81 (95% CI 0.73 to 0.86) for CRP, 0.84 (95% CI 0.71 to 0.91) for the composite three-marker test, and 0.88 (95% CI 0.81 to 0.92) for the composite six-marker test. The AUC of the six-marker test was significantly greater than that of the single markers.

Conclusion Combining information from several markers improves diagnostic accuracy in detecting bacterial versus

- 2007 yılına ait bu çalışmada
- Bakteriyel ve bakteriyel olmayan SIRS ayırımında lökositoz , CRP ve PCT etkin bulunmuştur.

C-reactive protein measurement in general practice may lead to lower antibiotic prescribing for sinusitis

Lars Bjerrum, Bente Gahrn-Hansen and Anders P Munck

SUMMARY

Background: *Symptoms of bacterial sinusitis overlap with viral sinusitis, and it is difficult to distinguish between the two conditions based only on a clinical examination. Uncertain diagnosis results in the significant overuse of antibiotics, which is considered to be one of the most important reasons for development of bacterial resistance to antibiotics. A raised C-reactive protein (CRP) level is an indicator of bacterial infection and the CRP rapid test has been shown to be useful for the diagnosis of bacterial sinusitis in general practice.*

Aims: *To examine whether general practitioners (GPs) who use the CRP rapid test in their practice have a lower antibiotic prescribing rate for sinusitis than GPs who do not use the test.*

Design of study: *Observational design.*

Setting: *General practice in Denmark.*

Method: *A group of GPs registered all contacts (*n *= 17 792) with patients who had respiratory tract infections during a 3-week period between 1 November 2001 and 31 January 2002. GPs who used a CRP rapid test were compared with GPs who did not, and the treatment of their patients (*n *= 1444) with suspected sinusitis was compared.*

Results: *A CRP rapid test was used by 77% (*n *= 281) of the GPs. In the group of GPs using a CRP rapid test, the rate of antibiotic prescribing was 59% (95% confidence interval [CI] = 56 to 62) compared with 78% (95% CI = 73 to 82) in the group of GPs who did not use a CRP test. Performing a CRP rapid test was the factor that exerted the greatest influence on whether the patients were prescribed antibiotics, and the level of CRP had a strong influence on the prescribing rate.*

Conclusion: *The CRP rapid test has a substantial influence on the treatment of sinusitis, and implementing the test in general practice may lead to a reduction in antibiotic prescribing to patients with sinusitis.*

Keywords: *antibiotics; C-reactive protein; general practice; sinusitis.*

A P Munck, gp, general practitioner, Audit Project Odense, Research

Introduction

ACUTE sinusitis is an inflammation of the paranasal sinuses lasting for up to 4 weeks, and is caused by either bacterial (purulent sinusitis) or viral (serous sinusitis) infection.[1] Acute sinusitis is a frequently occurring problem in general practice, and it is challenging for the general practitioner (GP) to diagnose. The 'gold standard' to assess the aetiology is a sinus puncture followed by aspiration and bacterial culture. However, this invasive procedure is of limited practical value and it is seldom used in primary care. Other tests, such as plain radiography, A-mode ultrasonography, computed tomography, and magnetic resonance imaging, which are of value in diagnoses, are not available in general practice. The clinical symptoms of purulent and serous sinusitis are often identical, making it difficult to distinguish between the two conditions. If the diagnosis is based on clinical examination alone, the rate of false-positive results is high, and patients are consequently prescribed unnecessary antibiotics.[2]

Markedly raised concentration of C-reactive protein (CRP), an acute phase protein produced in response to circulating cytokines from inflammatory foci, is an indicator of bacterial infection. Increased levels of CRP can be detected 6–12 hours after the onset of a bacterial infection by means of a rapid test. Studies have shown that measurement of CRP is useful for the diagnosis of bacterial sinusitis in general practice.[1,3–5] With regard to the impact of CRP measurement on the prescribing of antibiotics in patients with respiratory tract infections (RTIs), there are, however, conflicting results.[6,7] The aim of this study was to examine whether GPs who use a CRP test have a lower antibiotic prescribing rate for sinusitis compared to GPs who do not use a CRP test.

Method

A group of Danish GPs (*n* = 367) participated in a prospective registration of patients with RTIs during a 3-week period (15 working days) between 1 November 2001 and 31

- 2004 yılına ait bu makalede CRP yüksekliğinin viral ve bakteriyel sinüzitin ayırımında kullanılabileceği ve 1. basamak hekimlikte antibiyotik kullanımını azaltabileceği belirtiliyor.

Contributions of symptoms, signs, erythrocyte sedimentation rate, and C-reactive protein to a diagnosis of pneumonia in acute lower respiratory tract infection

R M Hopstaken, J W M Muris, J A Knottnerus, A D M Kester, P E L M Rinkens and G J Dinant

SUMMARY

Background: Diagnostic tests enabling general practitioners (GPs) to differentiate rapidly between pneumonia and other lower respiratory tract infections (LRTIs) are needed to prevent increase of bacterial resistance by unjustified antibiotic prescribing.

Aims: To assess the diagnostic value of symptoms, signs, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) for pneumonia; to derive a prediction rule for the presence of pneumonia; and to identify a low-risk group of patients who do not require antibiotic treatment.

Design of study: Cross-sectional.

Setting: Fifteen GP surgeries in the southern part of The Netherlands.

Method: Twenty-five GPs recorded clinical information and diagnosis in 246 adult patients presenting with LRTI. Venous blood samples for CRP and ESR were taken and chest radiographs (reference standard) were made. Odds ratios, describing the relationships between discrete diagnostic variables and reference standard (pneumonia or no pneumonia) were calculated. Receiver operating characteristic analysis of ESR, CRP, and final models for pneumonia was performed. Prediction rules for pneumonia were derived from multiple logistic regression analysis.

Results: Dry cough, diarrhoea, and a recorded temperature of ≥38°C were independent and statistically significant predictors of pneumonia, whereas abnormal pulmonary auscultation and clinical diagnosis of pneumonia by the GPs were not. ESR and CRP had higher diagnostic odds ratios than any of the symptoms and signs. Adding CRP to the final 'symptoms and signs' model significantly increased the probability of correct diagnosis. Applying a prediction rule for low-risk patients, including a CRP of <20, 80 of the 193 antibiotic prescriptions could have been prevented with a maximum risk of 2.5% of missing a pneumonia case.

Conclusion: Most symptoms and signs traditionally associated with pneumonia are not predictive of pneumonia in general practice. The prediction rule for low-risk patients presented here, including a CRP of <20, can considerably reduce unjustified antibiotic prescribing.

Introduction

THE main diagnostic challenge of general practitioners (GPs) facing patients with acute community-acquired lower respiratory tract infections (LRTIs) is selecting the right patients for antibiotic treatment. In contrast with acute bronchitis, where antibiotics are rarely indicated because the infection is mostly self-limiting,[1,2] in pneumonia it is considered bad practice to withhold antibiotic treatment from a patient. GPs have the difficult task of balancing the fear of missing the diagnosis of pneumonia against their duty not to contribute to the growing problem of bacterial resistance by routine prescription of antibiotics.[9-10] Therefore, it would be useful to have diagnostic tools in general practice that enabled GPs to differentiate between pneumonia and other LRTIs rapidly, i.e. during one consultation, without the need to refer a patient for chest X-rays or laboratory tests.[11] However, to the best of our knowledge there have not been any diagnostic studies on the full scope of LRTIs in general practice. Classical symptoms and signs of pneumonia, derived from hospital studies, are of limited value in everyday general practice, because of the lower incidence and smaller extent of disease found there. Owing to this lower pre-test probability of pneumonia, the predictive value of a positive symptom or sign (for example, crackles on auscultation) for pneumonia will automatically be lower, assuming equal diagnostic skills of the doctors involved.[12-14] Additional use of erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) tests might be helpful.[15-17]

Despite the diagnostic uncertainties, the incidence of acute bronchitis has been estimated at 24 to 46 per 1000

- 2003 yılına ait bu makalede
- CRP ve ESR yüksekliğinin düşük riskli hastalarda klinik bulgulardan bağımsız bir bakteriyel pnömoni göstergesi olarak kullanılabileceği, gereksiz antibiyotik kullanımının önlenebileceği belirtiliyor.

BMC Infectious Diseases

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Research article

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Dynamics of C-reactive protein and white blood cell count in critically ill patients with nosocomial Gram positive vs. Gram negative bacteremia: a historical cohort study

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Published: 14 September 2007

BMC Infectious Diseases 2007, 7:106 doi:10.1186/1471-2334-7-106

Received: 23 October 2006

Accepted: 14 September 2007

This article is available from: http://www.biomedcentral.com/1471-2334/7/106

Abstract

Background: Nosocomial bacteremia is associated with a poor prognosis. Early adequate therapy has been shown to improve outcome. Consequently, rapid detection of a beginning sepsis is therefore of the utmost importance. This historical cohort study was designed to evaluate if different patterns can be observed in either C-reactive protein (CRP) and white blood cell count (WCC) between Gram positive bacteremia (GPB) vs. Gram negative bacteremia (GNB), and to assess the potential benefit of serial measurements of both biomarkers in terms of early antimicrobial therapy initiation.

Methods: A historical study (2003–2004) was conducted, including all adult intensive care unit patients with a nosocomial bacteremia. CRP and WCC count measurements were recorded daily from two days prior (d_{-2}) until one day after onset of bacteremia (d_{+1}). Delta (Δ) CRP and Δ WCC

- 2007 yılına ait bu makalede yoğun bakım ünitelerinde APACHE II skorundan bağımsız olarak
- Gram negatif bakteriyemi göstergesi olarak CRP ve lökositozun kullanılabileceği belirtiliyor.

- Allogenik kök hücre nakli yapılan hastalarda bakteriyel enfeksiyonların tanısında CRP (>90 mg/L)özgüllüğü yüksek ve negatif öngörü değeri taşıyor.
- İnvaziv bakteriyel enfeksiyonlar için duyarlılığı düşük.

Creactive protein and procalcitonin levels for diagnosisi of invasive bacterial infections in allogenic stem cell transplantation recepients
Rev Med Chil 2007; 35: 982-9

Akut osteomiyelit ve septik artrit olgularında

- BK % 60 normal
- CRP ve ESR olguların % 80 inde yüksek saptanmış
- CRP uygun tedavi ile 1 hafta sonra normale dönüyor.
- CRP tedavi yanıtı bakımından yararlı bir gösterge

Arch Pediatr 2007;14: S86-90

- Febril nötropenik hastaların ciddi sistemik enfeksiyon tanımlanmasında PCT , CRP ye göre daha iyi bir gösterge olarak bulunmuş.

Procalcitonin and CRP as severe systemic infection markers in febril neutropenic adults.BMC Infect Dis 2007; 7: 137.

- PCT ve CRP > veya = 20 mg pnömoni, bakteriyel enfeksiyon ve hospitalizasyonla ilişkili
- Her iki testin de pozitif öngörü değeri düşük
- PCT 1. basamak hekimlikte CRP ye üstün bulunmamış.

Procalcitonin versus CRP for predicting pneumoniain adults with lower respiratory tract infection Br. J Gen Pract 2007;%7: 555-60

- Diyabetik ayak enfeksiyonlarında
- Lökositoz ve nötrofil artışı enfekte ülserleri tanımlamada yeterli değil.
- CRP ve PCT daha değerli bulunmuş.

Serum PCT and CRP concentration to distinguish mildly infected from non-infected diabetic foot ulcers: a pilot study. Diabetologia 2008; 51: 347-52

- Terminal böbrek hastalarında enfeksiyon en önemli ölüm nedeni
- Klinik tipik enfeksiyon bulgusu olmayan ölen hastalarda CRP değeri >100 bulunmuş, (kardiyak nedenlerle ölenlere göre anlamlı derecede yüksek)

The prognostic value of the CRP levels in HD with death risk from infection Clin Nephrol 2007; 68: 18-25.

- CRP (>95 mg/L) ve dışkı kültürü pozitifliği ile korele bulunmuş.
- Çocuklarda acil serviste bakteriyel gastroenterit tanısı için CRP yüksekliğinin yol gösterici olduğu belirtiliyor.

The quick-read CRP test for prediction of bacterial gastroenteritis in the pediatric emergency department
Pediatr Emerg Care 2007; 23: 634-7

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