Research number 1

The Predictive Value of Soluble Endothelial Selectin Plasma Levels in Children with Acute Lung Injury

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Abstract

The study aimed to evaluate the value of soluble endothelial selectin (sE-selectin) plasma level measurement in predicting acute lung injury (ALI) outcome in children.

Methods: The study was a prospective, controlled study that involved 50 children with ALI and 50 healthy children as a control. Soluble endothelial selectin and C-reactive protein plasma levels were measured at days 1and 7 of development of ALI for the patient group and done only once for the control group.

Results: Plasma sE-selectin was significantly higher in the patients than the control group (P = .001). Mortality reached 32% of children with ALI. The deceased subgroup had significantly higher plasma sE-selectin levels both at days 1 and 7 than the survived (P=.02 and P < .001 respectively). There was positive correlation between plasma sE-selectin at day 7 with durations of both pediatric intensive care unit and mechanical ventilation. Levels

of sE-selectin at days 1 and 7 had significant positive correlation with C-reactive protein level and ALI severity. Soluble endothelial selectin plasma levels of 302 ng/mL at day 7 were the best cutoff value to predict ALI related deaths.

Conclusion: Plasma sE-selectin level served as a good predictor biomarker for both mechanical ventilation duration and the mortality risk in children with ALI.

Research number 2

Diagnostic Efficacy of Serum Amyloid A Protein and Soluble Intercellular Adhesion Molecule 1 in Pediatric Ventilator-Associated Pneumonia

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Abstract

Objectives: Study of inflammatory biomarkers which may aid in early detection of ventilator-associated pneumonia (VAP) in children and predicting their outcome.

Patients: Thirty-five children, aged 2 months to 13 years, needed mechanical ventilation (MV) for more than 48 hours due to causes other than pneumonia.

Methods: Measurement of serum amyloid A (SAA) protein, soluble intercellular adhesion molecule 1 (sICAM-1), and C-reactive protein (CRP), modified clinical pulmonary infection score (CPIS) and performing culture of endotracheal aspirate at the start and on the third day of MV.

Results: Ventilator-associated pneumonia was diagnosed by CPIS in 6 (17.1%) of 35 patients. On the third day of MV, there was a significant increase in serum mean levels of SAA, sICAM-1, and CRP in comparison to the start of MV (P = .005, .004, and .01, respectively). Three (50%) of 6 patients with VAP died, while 4 (14.28%) of 28 patients without VAP died. The sensitivity of serum SAA, sICAM-1, and CPIS were 100% for predicting VAP, while specificity was highest for CPIS (96.55%) followed by SAA (93.1%). Combination of CPIS and SAA increased the specificity to 100%. For predicting nonsurvival, serum SAA and sICAM-1 had a sensitivity of 100% and a specificity of 92.86% and 89.29%, respectively.

Conclusion: Serum amyloid A and sICAM-1 may be considered as reliable markers for detection of VAP. Combination of serum SAA with CPIS increased the specificity to 100%. Measurement of SAA in patients with VAP also had a good predictive value for nonsurvival in such patients.

Research number 3

Soluble urokinase-type plasminogen activator receptor in monitoring of treatment response in acute exacerbation of chronic obstructive pulmonary disease

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Abstract

Objective: To evaluate value of suPAR in diagnosis of AECOPD and monitoring of treatment response, to study relationship between suPAR and fibrinogen in AECOPD. Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) leads to increased airway inflammation contributing to exaggerated release of inflammatory mediators.

Methods*:* Twenty control subjects (group I), 45 patients with AECOPD (group II) were enrolled in this study. All subjects were subjected to history taking, clinical examination, chest X ray, pulmonary functions, blood gases. Serum samples were taken for assessment of suPAR and fibrinogen on day 1 and 14 days after treatment of AECOPD.

Results: Serum levels of suPAR in AECOPD patients were significantly higher than that in control. A significant decrease in mean suPAR level was observed after treatment. Sensitivity, specificity and accuracy of suPAR were 95.6, 80 and 93% respectively. Significant positive correlations were found between suPAR and fibrinogen with Gold stages of COPD as the increase in their levels correlated with COPD severity.

Conclusions: Serum suPAR level can be helpful in follow up and monitoring of treatment response; might be a valuable biomarker in prognosis of AECOPD. Serum suPAR correlated with fibrinogen, so both markers have the potential to predict AECOPD.

Research number 4

The Value of Admission Serum IL-8 Monitoring and the Correlation with IL-8 (-251A/T) Polymorphism in Critically Ill Patients

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Abstract

Background. The clinical management of sepsis is a highly complicated process. Disruption of the immune system explains in part the major variation in sepsis outcome. IL-8 is a proinflammatory cytokine, genetic polymorphism of this cytokine could explain the outcome of sepsis. The present study was conducted to determine the value of serum IL-8 monitoring and its (-251A/T) genetic polymorphism in critically ill patients.

Patients and Methods. 180 critically ill patients were allocated into two groups, 90 septic patients (sepsis group) and 90 nonseptic patients (SIRS group).Admission serumIL-8 and its (-251A/T)mutant allele were detected.

Results. The admission mean value of serum IL-8 was significantly elevated in sepsis group. In both groups, the mean value of serum IL-8 in nonsurvived patients and patients with IL-8 (-251A/T) mutant allele was significantly higher. A positive correlation of survival and IL-8 (-251A/T) mutant allele was detected in both groups. The serum IL-8 distinguished wild from IL-8 (-251A/T) mutant allele at a cut-off value of 600 pg/mL.

Conclusion. The admission mean value of serum IL-8 was significantly elevated in septic, nonsurvived, and patients with IL-8 (-251A/T) mutant alleles. A positive correlation of survival and IL-8 (-251A/T) mutant allele patients was detected.

Research number 5

Evaluation of the Diagnostic Value of Serum Cytokeratin-8 as a Marker of Liver Injury in Chronic Hepatitis C Patients

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British Journal of Medicine & Medical Research 2016;12(4): 1-13

Abstract

Background: Hepatitis C virus (HCV) is considered the most health problematic in Egypt. Its severity ranges from mild illness to serious complications as cirrhosis and hepatocellular carcinoma. Keratins emerge as markers of liver injury beside significant contributors to liver disease pathogenesis.

Aims: We analyzed the cytokeratin-8 serum levels and blood mRNA expression in chronic hepatitis C patients to evaluate serum CK8 role as a marker of liver injury.

Patients and Methods: This study included 100 Egyptian patients with liver disease. They were 82 patients with chronic hepatitis C and 18 patients with hepatitis C-induced cirrhotic changes. Thirty healthy controls were also included in the study. All studied subjects underwent a clinical assessment and complete laboratory evaluation. For patients groups a conventional abdominal ultrasonography and guided liver biopsy were performed with histopathological examination toassess the grade of inflammation and stage of fibrosis according to the Metavir scoring. The levels of CK-8 serum and blood mRNA expression were measured.

Results: Serum CK-8 levels and mRNA expression were increased in HCV and cirrhotic patients compared to control group ($P < 0.001$*). Serum CK-8 levels were positively correlated with Metavir score in patients groups ($r=0.714$, $P < 0.001$) ($r=0.447$, $P < 0.001$) and in selected patients with inconclusive FIB4 index (values in between 1.45-3.25) ($r=0.291$, $P = 0.048$) ($r= 0.486$, $P < 0.001$).

Conclusions: Serum CK 8 levels were positively correlated with Metavir score and FIB4 index. They may be useful for monitoring disease activity in chronic HCV patients especially with inconclusive FIB4 index.

Research number 6

Prognostic role of tissue expression and serum level of YKL-40 in patients with diffuse large B-cell lymphoma

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Egyptian Journal of Haematology 2017;42:99–107

Abstract

Background Serum YKL-40 levels are increased in various inflammatory disorders and a wide range of malignancies. Moreover, these elevated levels correlate with poor prognosis of patients with cancer, suggestive of YKL-40 as a prognostic biomarker. The effect of YKL-40 on non-Hodgkin lymphoma prognosis has not been fully explained.

Aim The aim of this article was to study the serum levels and expression of YKL-40 in tissue specimens of patients with diffuse large B-cell lymphoma (DLBCL) for assessing its prognostic value and shedding light on their effect on survival.

Patients and methods The study included 60 patients with DLBCL. Enzyme-linked immunosorbent assay was used to assess the serum YKL-40 levels. Immunohistochemical staining was used to detect YKL-40 protein expression in lymphoma specimens.

Results YKL-40 serum levels were significantly higher in patients with DLBCL when compared with the control group. YKL-40 protein was expressed in 66.67% of examined specimens. Receiver–operator curve analysis showed serum YKL-40 at a cutoff value of greater than or equal to 95.5 ng/ml had a sensitivity of 70% and a specificity of 95% for DLBCL diagnosis. In patients with DLBCL, progression-free and overall survival rates significantly decreased with increased serum levels of YKL-40 above the cutoff level as well as in YKL-40 positive expressed patients.

Conclusion Serum YKL-40 and its tissue expression could be a valuable prognostic marker in patients with DLBCL

Research number 7

Circulating endothelial cells and serum visfatin are indicators of cardiovascular disease risk in psoriasis patients

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Abstract

Background: Cardiovascular risk in psoriasis (PS) appears to be dependent on disease severity. Circulating endothelial cell (CEC) counts appear to be elevated in numerous conditions associated with endothelial dysfunction including chronic immune-mediated inflammatory disorders. Adipokines could serve as a missing link between PS and comorbidities

Aim: To evaluate the numbers of CECs and serum visfatin levels in PS patients in comparison to controls to investigate their possible role in increased cardiovascular disease (CVD) risk.

Methods: Twenty-five PS patients and 15 healthy individuals were recruited. CECs numbers were detected in peripheral blood samples through studying CD146 and CD45 expression by flow cytometry.
Serum visfatin levels were detected by enzyme-linked immunosorbent assay.

Results: There was a statistically significant increase in CEC numbers and serum visfatin levels in PSpatients compared to controls ($p < 0.001$) with significant positive correlations between serum visfatin levels and PS severity and numbers of CECs in PS patients. Also, there was a significant difference in numbers of CECs ($p \leq 0.001$) and serum visfatin levels ($p \leq 0.001$) between CVD risk positive and CVD
risk negative psoriasis patients.

Conclusion: Both numbers of CECs and serum visfatin levels were increased in PS patients compared with controls and also increased in CVD risk positive when compared with CVD risk negative PS patients. Both correlated with disease severity suggesting the possibility of increased CVD risk in PS patients.

Research number 8

Correlation Between Serum Adipokines with Liver Cell Damage in Non-Obese Chronic Hepatitis C Egyptian Patients

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International Journal of Medicine and Pharmaceutical Science (IJMPS) 2016; 6(4): 65-76

Abstract

Background: Hepatitis C virus (HCV) continues to be a major disease burden on the world, especially in Egypt, which may progress to cirrhosis. Adipokines are implicated in regulation of the inflammatory response, angiogenesis and fibrogenesis. Some adipokines have a protective effect while others have negative effect in chronic hepatitis C (CHC).

Aim of the study: We aimed to study the new adipokines (visfatin, chemerin and omnetin1) in CHC patients to find out its relation to the biochemical liver functions tests and liver histopathology in non-obese chronic hepatitis C patients.

Patients and methods: This study included 70 patients with CHC and 20 healthy individuals as a control group. Liver function tests, serum visfatin, chemerin and omentin1 levels were measured. Percutaneous liver biopsy was performed in CHC patients.

Results: The three adipokines levels were significantly increased in CHC patients comparing to control group (P<0.001). Serum visfatin and chemerin levels were negatively correlated with necro-inflammatory activity grade and fibrosis stage (P= 0.032,0.043, 0.029,0.036) respectively and not correlated with HOMA-IR (P= 0.236, 0.225), while
serum omentin1 was not correlated with necro-inflammatory activity grade and fibrosis stage (P=0.230,0.312) but negatively correlated with HOMA-IR (P=0.031).

Conclusion: The three adipokines levels were significantly elevated in CHC patients indicating their possible involvement in the pathogenesis of the disease and its metabolic complications. Serum visfatin and chemerin
concentration may serve as an additional tool in determining more advanced grades of necro-inflammatory activity grade and fibrosis stage. While serum omentin-1 can predict the severity of insulin resistance.