



HIGHER IP-10 VALUES CORRELATE WITH A VIRAL CAUSE OF INFECTION: A RETROSPECTIVE STUDY BASED ON NOVEL TESTS

B. Kertusha 1, 2 A. Parente 1, 2 T. Tieghi 1, E. Tortellini 2, M.S. Guardiani 2 F. Dominelli 2 J. Ronci 3 C. Racco3, U. Basile 3, R. Dal Piaz 4, 2 M. Lichtner 5, C. Del Borgo 1,2

1. ASL Latina, UOC Malattie Infettive
2. Sapienza Università di Roma, Dipartimento di Sanità Pubblica e malattie Infettive
3. ASL Latina, UOC Patologia Clinica, Ospedale S.M. Goretti
4. ASL Latina, Pronto Soccorso DEA II, Ospedale S. M. Goretti
5. Sapienza Università di Roma, Dipartimento NESMOS

Abstract

COVID-19 pandemic has prompted development of many antiviral drugs to fight the disease. Immunopathogenesis of the infections is still debated, although much research has been made in the last years. On the other hand novel tests are needed to distinguish between viral and bacterial infections, especially in the Emergency Department. In this retrospective study we describe the results of MeMed BV test in patients with viral infections, mostly COVID-19, and bacterial infections.

Introduction

C-X-C motif chemokine 10 (CXCL10) also known as interferon γ -induced protein 10 kDa (IP-10) binds CXCR3 receptor to induce chemotaxis, apoptosis, cell growth and angiostasis. Alterations in CXCL10 expression levels have been associated with inflammatory diseases including infectious diseases, thus making CXCL10 a potential therapeutic target. High IP-10 levels have been correlated with more severe COVID-19 infections but also severe cases of *M. pneumoniae* infection in children. MeMed BV is a test which by dosing levels of CRP, TRAIL and IP-10 can distinguish between bacterial and viral infections. The aim of our study was to correlate TRAIL, CRP and IP-10 levels with type of infection.

Materials and methods

Blood serum of 54 patients from a database of serums collected for other studies were taken retrospectively to perform MeMed BV test. The samples included 32 COVID-19 patients and 22 non COVID-19 patients. The group affected by COVID-19 had only pneumonia in 22 cases and ARDS in 10 cases. The non COVID-19 group comprised 3 viral infections (infective mononucleosis, Dengue Fever and Parvovirus B19), the remaining 19 had bacterial infections which included bacteremia, meningitis and bacterial pneumonia. 300 microliters of blood serum was taken from samples stored at -80° C. Data was analysed through GraphPad Prism 8.0.2. Pearson correlation test was used for bivariate analysis and One Way ANOVA for groups correlation.

Results

Serum of 54 adults, previously collected for other studies, was analysed. 4% of patients were excluded from the exploratory analysis because of ambiguous values. Among those included in the exploratory analysis, 62.5% were male, the median age was 68 years (with an interquartile range [IQR] of 51-80). 65% were COVID-19 patients, 6% other viral infections and 29% bacterial infections.

Non significant differences in BV scores were observed among patients with COVID-19, patient with other viral infections and patients with bacterial infections (medians 78.6 vs. 56 vs. 74.3; $p = 0.4$). However, significant differences were found in IP-10 levels (795.4 vs. 1010 vs. 333.4; $p < 0.05$), meaning higher levels in viral infections, with higher values in COVID-19 patients.

No difference was observed for TRAIL levels (37.1 vs. 56.87 vs. 42.35) and CRP (64.7 vs. 61.3 vs. 75.4).

In a multivariate analysis a significant negative correlation was observed between patients' age and TRAIL levels ($r = -0.39$, $p < 0.05$). This suggests that as age increases, there is a marked decrease in the protein expression.

Conclusion

Our study, although limited in sample size, shows that combined test failed to distinguish COVID-19 patients with pneumonia, but IP-10 levels may be a marker of viral infection suggesting that IP-10 target treatments may be useful in viral diseases, especially in COVID-19.