Co-detection of Group A Streptococcus and Viruses in Children with Pharyngitis

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Background. Co-detection of group A streptococcus (GAS) and viruses in children with pharyngitis has not been well documented. We aimed to study the occurrence of co-detection in relation to GAS diagnostic method and GAS emm types.

Methods. This was part of a prospective study done in an emergency department (ED) in febrile children 1–16 years of age with pharyngitis. Throat swabs and blood samples were collected and testing for GAS was performed by 2 different rapid antigen detection tests (RATDs; StrepTip and mariPOC) in the ED and by throat culture in laboratory. In addition, throat swab tests were for GAS by two different nucleic acid amplification tests (NAAT; Focus 3M and Illumigene). emm typing of GAS strains was performed from frozen isolates. Virus diagnostics was performed by NAAT and serology, and interferon response to virus infection was estimated by myxovirus resistance protein A (MxA) blood concentration.

Results. In total, 83 children (median age 5.5 years; interquartile range 3.2–12.2) were recruited in the study. Specimens from 78 and 48 patients were available for RADT and NAAT, respectively, and 13/19 of GAS isolates for emm typing. In comparison with throat culture results, sensitivities and specificities of GAS diagnostic tests were 72% and 86% for Streptip, 100% and 89% for mariPOC, 91% and 87% for Focus 3M and 91% and 96% for Illumigene, respectively. In GAS positive patients, virus detection and elevated blood MxA level (>275 μg/L) were more frequent when GAS diagnosis was based on mariPOC (54.5%) than when it was based on Streptip (38.5%) test results. emm types GAS emm type 89 was detected in 7 patients of whom 6 had also a positive result in virus detection (P = 0.055).

Conclusion. In comparison with throat culture, diagnostic performance of different GAS tests varies greatly. In children with febrile pharyngitis, enhanced sensitivity of the GAS was 14.5% to be associated with increased co-detection of viruses and interferon responses questioning the significance of GAS detection as a true causative agent in these patients. Detection of GAS emm type 89 was associated with GAS-virus co-detection.

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2102. Elevated Neutrophil-to-Lymphocyte Ratio is an Effective Prognosis Indicator In Extra-Pulmonary Tuberculosis

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Background. Extra-pulmonary tuberculosis (EPT) may lead to serious outcomes in patients. Factors related to poor prognosis (PP) are still insufficiently understood. The peripheral blood neutrophil to lymphocyte ratio (NLR) has been reported to correlate with the prognosis of many acute or chronic infectious diseases. In this perspective, we aimed to investigate the prognostic relevance of NLR in EPT patients.

Methods. Data were collected from EPT patients, diagnosed between 1990 and 2016. We defined PP by the occurrence of clinical complications during the hospital-stay or the follow-up. We evaluated the performance of NLR in identifying PP. The Kaplan-Meier method was used to generate complication-free survival curves which were compared by Log rank test according to NLR categories. Cox proportional hazard regression analysis was used to reveal the independent prognostic factors.

Results. We included 265 patients with EPT among them 68 cases (25.7%) had at least one PP. The mean age was 42 ± 19.2 years. Sex ratio was 0.8. EPT in immunocompromised node in 95 cases (35.8%), neuromeningeal sites in 50 cases (19%) and bones in 42 cases (15.8%). Mean value of NLR was significantly higher in the PP group (4.5 ± 3 vs. 3.2 ± 2.5; P = 0.01). NLR had an Area Under the Receiving Operating Curve (AUROC) of 0.63 in predicting PP (P = 0.04). At an optimal cut-off of 2.7, sensitivity and specificity were of 60%. There were 128 cases (48.3%) with a high NLR ≥ 2.7. Positive predictive value of NLR was 67.2% while negative predictive value achieved 80%. Overall, the median complication-free survival was 33 days (CI95% 19.2–46.7). When stratified by NLR cutoff, survival curve analysis showed that the one-month complication-free survival rate was lower in patients with high NLR (45% vs. 55%; P = 0.042). In multivariate Cox regression analysis, high NLR was an independent risk factor of predicting PP in EPT patients (HR=1.7; CI95% 1.1–2.9; P = 0.048).

Conclusion. Elevation of neutrophil-to-lymphocyte ratio is an independent prognostic factor to predict complications in patients in EPT and may be applied in clinical management of EPT in association with other prognostic indicators in order to identify high-risk patients.

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