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Co-infection Chaos in Patients with Cystic Fibrosis: Is Every Infection Bacterial?

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Objectives: Approximately 40% of children with cystic fibrosis are hospitalized for respiratory tract infection. Fifty percent of these infections are observed depending on to respiratory tract viruses (most frequent Influenza A-B, RSV and rhinovirus). Infection agent is usually not known due to bacterial colonization in patients, inadequate isolation of infectious agents in younger patients, and inability to perform respiratory tract virus examinations in every center. This leads to difficulties in treatment. We aimed to evaluate the patients who were hospitalized because of respiratory tract infections in terms of viral, bacterial and co-infections.

Methods: Twenty-nine cystic fibrosis patients who were hospitalized and treated due to respiratory tract infection between September 2017 and February 2019 were included in the study. Demographic data, clinical and laboratory findings, respiratory tract infections were evaluated retrospectively.

Results: There were 70 patients (min: 1- max: 7) hospitalization. Sixteen (52.2%) of the cases were female, with a median age of 66 months (4-320). Colonization was present in 22 cases (75.9%) and the most common microorganisms were *Pseudomonas aeruginosa* (75.8%) and *Staphylococcus aureus*. Infection and co-infection with respiratory tract viruses were most frequently seen between March-May 2018 (66.6%) and December 2018-February 2019 (75%). Respiratory tract viruses were most common in September-November 2017 and March-May 2018. Respiratory tract infection agents are given. There was no correlation between age and viral infections ($p = 0.07$). There was no significant difference between symptom and physical examination findings when viral and bacterial infections were compared ($p > 0.05$). There was no significant difference between the two groups in white blood cell, absolute neutrophil count, c-reactive protein and for the decrease in FEV_1 ($n = 13$) ($p > 0.05$). No statistically significant difference was found between hospitalization periods ($p = 0.1$). In patients with sputum culture, the rate of presence of respiratory tract virus was statistically significant in patients with *Staphylococcus aureus* growth ($p = 0.01$). One patient died due to a co-infection of RSV A + B and *Pseudomonas aeruginosa*.

Conclusion: In our study, age, symptom and examination findings, laboratory data, pulmonary function tests and duration of hospitalization were similar in bacterial, viral and co-infections. Despite the studies conducted, controversy continues over infection agents, treatment methods and durations of cystic fibrosis patients.

Keywords: Cystic fibrosis, respiratory tract infection, co-infections