

# Evolution of cytokines/chemokines in cases with severe nosocomial pneumonia and distinct etiologies in mechanical ventilated patients

Dmytro Dmytriiev | Kostiantyn Dmytriiev | Oleksandr Nazarchuk | Yulia Babina | Kateryna Dmytriieva [See Less](#) 

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## Abstract

**Aim:** To compare the systemic cytokines/chemokines levels over time during the evolution of mechanical ventilated (MV) children hospitalized with nosocomial pneumonia (NP) with and without *Pseudomonae Aerogenosa* (PAi) infection.

**Methods:** MV children <5 y.o. hospitalized with NP were prospectively investigated in Vinnitsa regional clinical hospital. Clinical data and samples were collected to investigate 20 etiological agents and serum cytokines/chemokines levels on admission and 2 to 4 weeks later. Cases with PAi received this diagnosis irrespective of having other etiologies.

**Results:** 86 patients were enrolled, however 16 patients were excluded from the study. Study group comprised of 72 cases with established etiology. The median age and sampling interval was 21 (9-27) months and 19 (16-21) days, respectively. Etiology was viral-bacterial (22.2%), and bacterial (77.8%). PAi was found in 23 (26.7%) patients. Median interleukin-6 (IL-6; 9.4 [4.7-24.4] vs 18.1 [17.2-20.4];  $P = .03$ ), IL-10 (3.2 [3.1-4.5] vs 12.1 [11.8-17.4];  $P = .04$ ), and CCL2 (21.4 [12.4-24.3] vs 92.8 [68.4-118.0];  $P < .001$ ) were significantly higher in convalescent samples, whereas median CXCL10 (80.4 [35.4-172.2] vs 15.2 [0-117.4];  $P < .001$ ) was lower. Acute vs convalescent levels evolution of IL-6, IL-10, and CXCL10 did not differ among patients with or without PA. However, CCL2 decreased (24.2 [12.2-44.4] vs 20.4 [20.2-22.4];  $P = .1$ ) in patients with PAi and increased (10.1 [4.4-23.4] vs 20.8 [19.4-22.2];  $P = .001$ ) in patients without it.

**Conclusion:** The marked increase of CCL2 serum levels during the acute phase makes it a potential biomarker of PAi among MV children with NP.

## Footnotes

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