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HSV respiratory tract infections in immunocompromised patients not undergoing mechanical ventilation

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Background: While the role of HSV in VAP has been well defined, few studies have investigated the clinical impact of HSV detection in lower respiratory tract of non-ventilated immunocompromised patients with pneumonia. The aim of our study was to define pneumonia caused by HSV infection in such conditions, not undergoing to invasive mechanical ventilation.

Material/methods: This is a pilot, prospective, observational study. We included hospitalized patients aged >18 years with CAP, HAP or HCAP non responding to adequate empirical antibiotic therapy, who were immunocompromised and/or undergoing immunosuppressive therapy in the last six months. Exclusion criteria were: VAP, administration of antiviral agents active on HSV in the previous month, pregnancy and contraindications for bronchoscopy. BAL samples were cultured for bacteria, mycobacteria and fungi. Quantitative real-time PCR (Elitech Molecular Diagnostic, Torino) for HSV and respiratory viruses was performed on BAL and blood samples, and also galactomannan antigen. Cytological examination of BAL samples was also carried out with identification of viral inclusions and immunohistochemical staining (DAKO Autostainer, CA) for HSV.

Results: We enrolled 45 patients from January 2015 to June 2016. Age average was 66.25 years (range 29-85); 30 patients (66.7%) were male. 14 (31.1%) cases tested positive for HSV-PCR on BAL with viral loads ranging between 10³ cp/mL and 10⁷ cp/mL; and classified into four nosological groups

(see Table). 6/9 patients with HSV pneumonia and 4/5 with HSV tracheobronchial isolation had been receiving immunosuppressive therapies (see Figure). Crude 30-day mortality was higher (44%) in patients with pneumonia due to HSV than in those with HSV tracheobronchial isolation (20%).

Conclusions: HSV pneumonia seems not uncommon in our non-VAP immunosuppressed patient population. Future research is needed to validate our tentative definitions of HSV pneumonia to assess the impact of different immunosuppressive conditions.

Type of infection	Definition	Cases
PROVEN PNEUMONIA 3/45(6.7%)	HSV single pathogen in BAL (PCR) + cytological HSV identification and/or immunohistochemical HSV identification +/- HSV-PCR positive in blood	3/3 3/3 3/3 2/3(+)
PROBABLE PNEUMONIA 3/45(6.7%)	HSV-PCR positive in BAL concomitantly to other pathogens + cytological HSV identification and/or immunohistochemical HSV identification +/- HSV-PCR positive in blood	3/3 3/3 2/3 1/3(+)

<p>POSSIBLE PNEUMONIA</p> <p>3/45(6.7%)</p>	<p>HSV-PCR positive in BAL (with other pathogens) with viral load > 10⁵ copies/ml</p> <p>or HSV-PCR positive in BAL (without other pathogens) with viral load > 10⁵ copies/ml</p> <p>+ cytology and/or immunohistochemistry not compatible with HSV infection</p>	<p>3/3</p> <p>0/3</p> <p>3/3</p>
<p>TRACHEOBRONCHIAL ISOLATION</p> <p>5/45(11.1%)</p>	<p>HSV-PCR positive in BAL (with other pathogens) with viral load < 10⁵ copies/ml</p> <p>or HSV-PCR positive in BAL (without other pathogens) with viral load < 10⁵ copies/ml</p> <p>+ cytology and/or immunohistochemistry not compatible with HSV infection</p>	<p>4/5</p> <p>1/5</p> <p>5/5</p>

