



## Letter to the Editor

## Legionella urinary antigen test –a contribute towards a more rational use



Legionnaires Disease (LD) is a common cause of community acquired pneumonia (CAP). LD diagnosis is challenging due to a lack of distinctive features at presentation [1]. Inadequate diagnosis and further derisory treatment could increase morbidity and mortality.

Although it detects only Legionella serotype I, Legionella urinary antigen test (LUAT) twisted the ideal way to diagnosis of LP because is a very rapid test with very high specificity [2] and its sensitivity appears to be disease severity related [3].

Recent guidelines provide little and inconsistent recommendations on this test (Table 1). In our hospital, LUAT is routinely performed to all admitted patients presenting with CAP if *Streptococcus pneumoniae* urinary antigen test (PUAT) is negative.

male, median Charlson Comorbidity Index was 1 (IQR 3) and 61 patients (55%) were admitted to general ward.

All but two patients (98,2%) had at least one of the studied characteristics. These two patients where admitted to the ward. No HIV or immunosuppressed patients were identified and no outbreaks occurred during study period.

We performed a retrospective cohort focused on clinical and analytical data to solve a practical issue: whom to test for LUAT in LD suspicion at admission, to appropriate its usage.

Some analytic characteristics (such as hypophosphatemia, hyperferritinemia, microscopic hematuria or elevated creatine kinase) were proven to be more specific to LD than the clinical and analytical

Table 1

Testing recommendations according to different guidelines.

Guideline	Canadian	merican (IDSA)	British (BTS)	Dutch	ESCMID	Swedish	NICE
Year of publication	2000	2007	2009 (“annotated in 2015”)	2011	2011	2012	2014
Recommendation	Severe CAP and those admitted to ICU	Critically ill CAP patients; Recent travel, pleural effusion, active alcohol abuse, immunocompromised and failure to ambulatory antibiotic treatment	Moderate and severe CAP, specific risk factor and during outbreaks	Severe CAP	“(…)for reasons of severity and in other patients where this infection is clinically or epidemiologically suspected”	Severe CAP and moderately severe with treatment failure	moderate or high severity CAP
Level of Evidence/ recommendation	Level II evidence	Level II evidence; Moderate recommendation	D/B+	NA	A3	I A	NA

Testing recommendations according different guidelines.

The aim of the present study is to evaluate clinical characteristics and analytic features at admission that could help reducing LUAT overuse.

We identified, from hospital laboratory database, all LUAT (Binax Now®) performed between 2008 and 2015 and selected positive tests and further analyzed patient characteristics including conventional clinical and analytic features of LP: alcohol abuse, tobacco use, diarrhea at presentation, recent travels, hyponatremia (serum sodium < 135 mEq/L) and renal dysfunction (serum creatinine > 1,1 mg/dL).

Patients transferred to our hospital with previous diagnosis of Legionella infection or presenting with nosocomial infections were excluded. LP diagnosis was defined by an assistant physician.

During the study period, 17308 patients were admitted to our hospital due to CAP. Six percent were PUAT positive (n= 1096; 6,3%) and thus were not tested for Legionella infection. From 15841 LUAT performed, 114 were positive, but four patients were considered to have assistant physician as having Pontiac Fever and thus excluded from our analysis. Hence, less than one percent (0,7%, n= 110) presented LP. Median age was 58 years old (IQR 25), 68% (n=75) were

approaches evaluated [4]. However, these markers are not commonly available at Emergency Departments, and are off value for LP initial suspicion.

Our results show that LUAT is infrequently positive: all but two patients had at least one of the studied characteristics. Therefore, we suggest that LUAT should only be performed in patients with at least one of the studied characteristics, specially in settings with empirical treatment including macrolide or fluoroquinolone, and thus avoiding its overuse. In contrast with recommendations that LUAT should only be performed in severe CAP, we observed that more than half of the patients with LD were admitted to general ward (presumably low severity CAP).

This study has some limitations. Our series do not include patients from outbreaks so results cannot be generalized to those occasions. Moreover, pneumococcal and legionella co-infection was not ruled out at admission since LUAT was not performed if PUAT was positive, which could be an issue in some critical ill patients.

For that, we believe that recommendations concerning LD should be revisited, emphasizing individual patient characteristics at admission. This strategy would decrease inappropriate LUAT use, improve its performance and reduces cost associated with CAP.

<https://doi.org/10.1016/j.ejim.2018.09.009>

Received 22 August 2018; Received in revised form 4 September 2018; Accepted 11 September 2018

Available online 24 September 2018

0953-6205/ © 2018 European Federation of Internal Medicine. Published by Elsevier B.V. All rights reserved.

**References**

- [1] Chahin A, Opal SM. Severe Pneumonia Caused by *Legionella pneumophila*: Differential Diagnosis and Therapeutic Considerations. *Infect. Dis. Clin. N. Am.* 2017;31(1):111–21.
- [2] Shimada T, Noguchi Y, Jackson JL, Miyashita J, Hayashino Y, Kamiya T, et al. Systematic review and metaanalysis: urinary antigen tests for Legionellosis. *Chest* 2009;136(6):1576–85.
- [3] Blazquez RM, Espinosa FJ, Martinez-Toldos CM, Alemany L, Garcia-Orenes MC, Segovia M. Sensitivity of urinary antigen test in relation to clinical severity in a large outbreak of *Legionella pneumonia* in Spain. *European journal of clinical microbiology & infectious diseases* : official publication of the. European Society of Clinical Microbiology 2005;24(7):488–91.
- [4] Cunha BA, Cunha CB. Legionnaire's Disease: A Clinical Diagnostic Approach. *Infect. Dis. Clin. N. Am.* 2017;31(1):81–93.

João Ferreira-Coimbra<sup>a,\*</sup>, Sandra Rebelo<sup>a,b</sup>, Ana Luísa Cunha<sup>a</sup>,  
João Tiago Guimarães<sup>a,b</sup>, Paulo Bettencourt<sup>b</sup>

<sup>a</sup> *Centro Hospitalar de São João, Portugal*

<sup>b</sup> *Faculty of Medicine, University of Porto, Portugal*

*E-mail address:* joaoferreiracoimbra@gmail.com (J. Ferreira-Coimbra)

---

\* Corresponding author at: João Artur Ferreira Freitas Coimbra, Centro Hospitalar de São João, Porto, Alameda Professor Hernâni Monteiro, 4200–319 Porto, Portugal.