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SEROLOGICAL DIAGNOSIS OF *Mycoplasma pneumoniae* INFECTION: A COMPLICATED PUZZLESensini A.<sup>1</sup>, Zuccherini F.<sup>1</sup>, Cerboni G.<sup>1</sup>, Galullo M.<sup>1</sup>, Meli L.<sup>2</sup>, Dal Maso G.<sup>2</sup>, Paoli C.<sup>2</sup><sup>1</sup>Sez. Microbiologia, Dip. Medicina Sperimentale e Scienze Biochimiche, Università degli Studi, Perugia, Osp. "S. Maria della Misericordia", Loc. Sant'Andrea delle Fratte-San Sisto, 06132 Perugia<sup>2</sup> DIESSE S.P.A., Via delle Rose 10, Monteriggioni, 53035 Siena**Introduction**

*Mycoplasma pneumoniae* is one of the causative infectious agents of atypical pneumonia, mainly in children and young adults. The diagnosis of infection is often deformed by means of serological tests such as Complement Fixation Test (CFT) and ELISA. The many studies on this subject highlight that *M. pneumoniae* infection is still a difficult diagnosis.

**Materials and methods**

In this study have been used: Chorus *M. pneumoniae* (ELISA) IgG, IgM, Chorus total Ab using CFT kits (DIESSE, Siena, Italia).

**Samples**

The population under study has been divided into two groups:

**Group 1:** 52 serum samples from healthy blood donors;

**Group 2:** 50 serum samples from 52 patients (23 women and 27 men) withdrawn at the moment of the clinical diagnosis of atypical pneumonia. The average age was 29,2 yrs (range 1 – 85 years) and 48% of the patients were < 20 year old.

**Results**

<b>Group 1 n = 52</b>							
<b>Mycoplasma IgG</b>	<b>n</b>	<b>%</b>	<b>Mycoplasma IgM</b>	<b>n</b>	<b>%</b>	<b>CFT</b>	
Negative	12	23	Negative < 0,9	42	81	Negative	30
High titer ≥ 40 AU/mL	21	40	Equivocal ≥ 0,9 index ≤ 1,1	4	8	1:8	8
Moderate titer <40 ≥ 18 AU/mL	14	27	Positive > 1,1	6	12	1:16	8
Low titer > 18 ≤ 12 AU/mL	5	10				1:32	4
total	52		total	52		1:64	1

<b>Group 2 n = 50</b>							
<b>Mycoplasma IgG</b>	<b>n</b>	<b>%</b>	<b>Mycoplasma IgM</b>	<b>n</b>	<b>%</b>	<b>CFT</b>	
Negative	9	18	Negative < 0,9	14	28	Negative	17
High titer ≥ 40 AU/mL	19	38	Equivocal ≥ 0,9 index ≤ 1,1	4	8	1:8	5
Moderate titer <40 ≥ 18 AU/mL	16	32	Positive > 1,1	32	64	1:16	4
Low titer > 18 ≤ 12 AU/mL	6	12				1:32	6
total	50		total	50		1:64	18

As the percentage of patients IgG+ is similar in the two studied sub-populations, the determination of total Ab by means of CFT has been performed in order to achieve a better picture of the infection status.

**Correlation between the ELISA IgG and IgM tests and the CFT**

**CFT was positive in 92,3% of 26 samples IgG+IgM+,**

Result	Number
Test IgG+ IgM+	26
Test IgG+ IgM+ FC+	24/26
Test IgG+ IgM+ FC-	12/26

**CFT was positive in 41,7% of 12 samples IgG+IgM-,**

Result	Number
Test IgG+ IgM-	12
Test IgG+ IgM- FC+	5/12
Test IgG+ IgM- FC-	7/12

**CFT was negative in 3 samples IgG-IgM+,**

Result	Number
Test IgG- IgM+	3
Test IgG- IgM+ FC+	0/3
Test IgG- IgM+ FC-	3/3

In 5 samples the infection could be excluded as they resulted negative for all the tested parameters..

**Conclusions**

The presence of IgGs even at high titer cannot be considered as indicative of acute or recent infection, if performed on a single sample (1).

The CFT shows a good correlation with the ELISA tests in IgG+IgM+ samples , but cannot be easily interpreted in the other cases, even though the value of the antibody titer can be of help, mainly when the test is performed on a single sample. The detection of specific IgM is the most reliable test, mainly when performed in conjunction with CFT. The Chorus system offers the advantage that it is possible to perform at the same time both ELISA and CFT (for which results are obtained in less than 1 hour) methods, thus allowing to obtain in a short time the complete serological status of the patients.

**Bibliography**

1- Loens K. *et al.* Acute respiratory infection due to *Mycoplasma pneumoniae*: current status of diagnostic methods. (2010) European Journal Of Clinical Microbiology And infectious Diseases. **29**: 1055-1069.