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FIVE CASES OF NOSOCOMIAL AND COMMUNITY-ACQUIRED LEGIONNAIRES' DISEASE IN SÃO PAULO, BRAZIL

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SUMMARY

Legionella sp has been emerging over the last decade as an important cause of pneumonia both hospital and community-acquired. Following an outbreak in a Renal - Transplant Unit stocked serum was tested for antibodies against **Legionella pneumophila** serogroup 1, and 5 cases of Legionnaires' Disease were reviewed. Two of the cases were nosocomial and three cases were community - acquired. Clinical and laboratorial aspects were similar to those expected for other causes of pneumonia, however jaundice was encountered in two cases. This study suggests that the real incidence of pneumonia caused by **Legionella sp** is being underestimated and the authors emphasize the importance of considering Legionnaires' Disease when empirically treating community - acquired pneumonia.

KEYWORDS: Nosocomial pneumonia; Legionnaires' Disease; community-acquired pneumonia; **Legionella pneumophila** serogroup 1.

INTRODUCTION

In view of the appearance of nosocomial Legionnaires' Disease in the Hospital of the University of São Paulo a study concerning the potable water of the hospital was performed. **Legionella sp** was isolated in various points of the system in different buildings[3].

In 1989 the first pneumonia by **Legionella sp** was described in our country[2] and in view of the fact that the bacterium is ubiquitous it probably has a larger role in community-acquired pneumonia than previously believed. The object of this study is to present five cases of sporadic Legionellosis diagnosed in the Hospital das Clínicas from 1988 to 1990.

METHODS

Serum samples of patients with pneumopathy sent to the laboratory during the period of 1988 to 1990 were tested for antibodies against **Legionella pneumophila** serogroup 1 as described elsewhere[2]. The patients' charts were reviewed when the direct immunofluorescent assay showed a four-fold or more increase of the antibody titers to > 128 during convalescence or a single titer of > 256. A case was considered when the patient presented respiratory symptoms and new alterations on the chest x-ray. Clinical data were obtained from the charts.

RESULTS

Five cases of Legionnaires' Disease were studied. Four were male. Their ages varied from 28 to 45 years. Two cases were nosocomial and three were community-acquired.

The outcome was fatal in one case in which the diagnosis was not suspected. In three cases there was an underlying disease: Systemic Lupus eritematosus, Hansen's Disease and Chronic Mielocytic Leukemia.

Pneumopathy was bilateral in all five cases and in three a small pleural effusion was present. Four cases were treated with oral erythromycin with rapid improvement.

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Case 1: male, 37 years-old, was hospitalized in September 9, 1988. Three days previously he had been discharged from another hospital with diagnosed Chronic Mieloid Leukemia and had been interned for 21 days.

He presented fever, a productive cough with greenish sputum, dyspnea and chest pain. The chest radiograph presented a bilateral alveolar consolidation in the lower lobes and a small right pleural effusion. He received penicillin, amikacin, cotrimoxazol and erythromycin. On September 20 a lung biopsy was performed and yielded a positive culture for **Legionella sp.**

Chemoterapy for leukemia was started a month later. Treatment with erythromycin was maintained until the patient was discharged, three months after admission. Serologic titers were 64 (on admission) and 4096 (a month later).

Case 2: male, 40 years-old, had been receiving DDS for Hansen's Disease for 4 years.

The patient was interned on June 8, 1989 for difficulty in breathing, dizziness, nausea, headache and fever (up to 40°C) for 5 days. He presented no cough, diarrhea or vomiting. On auscultation he presented diminished murmur in the middle right and the lower left lungs. On the chest radiograph a consolidation was present in the middle lobe (lobar consolidation) and in the superior segment of the lower left lobe. On the second day the patient attempted suicide after presenting persecutory ideas.

He received penicillin on hospitalization without improvement. Three days later the patient started oral erythromycin and became afebrile after 2 days.

Serologic titers were 64 (on admission) and 512 (two weeks later) and 1024 (three weeks later).

The patient was discharged on the 12th day.

Case 3: female, 28 years-old, was hospitalized on June 20, 1989 for Systemic Lupus Eritematosus and received large doses of prednisone.

On the 57th day she presented fever (>38°C), dyspnea and generalized muscular pain. After 3 days she developed a productive cough with yellowish sputum streaked with blood, chest pain and abdominal distension.

On auscultation she presented ronchi and diminished murmur in the lower right lung that evolved bilaterally with crackles. The chest radiograph showed bilateral alveolar consolidation predominant in the right lower lobe and a small bilateral pleural effusion. She received a large spectrum of antibiotics and peritoneal dialysis. Legionellosis was not suspected. The patient died 8 days after the appearance of fever without having received adequate treatment.

Serologic titer on the day of death: 1024.

Case 4: male, 40 years-old, was hospitalized on June 18, 1990. Two weeks before he had presented fever, malaise, vomiting and diarrhea. After 5 days pneumonia was diagnosed and he received penicillin for 2 days followed by amoxicillin for 4 days without improvement. There was no cough but the diarrhea and fever persisted and the patient presented dyspnea.

On examination the patient presented cyanosis in hands and feet, slight jaundice and fever. The liver was palpable 2 cm below the right costal border. On auscultation there was difficulty on expiration, ronchi and crackles in the left hemithorax. The chest radiograph showed diffuse bilateral interstitial and alveolar infiltrates predominating in the upper lobes.

Oral erythromycin was started and the patient became afebrile on the 5th day. On the hospitalization renal failure was present and regressed during treatment. The patient was discharged on the 10th day.

Serologic titer was 2048 on the 4th day of hospitalization.

Case 5: male, 45 years-old, was interned on May 27, 1990 with a 15-day history of a cold, dyspnea, bilateral chest pain on inspiration, fever and a productive cough with brownish sputum streaked with blood. He presented jaundice for 10 days and episodes of headaches and dizziness. He smoked heavily.

On examination the patient presented important jaundice, liver palpable 6 cm below the right costal border and on auscultation there was a diminished murmur and crackles in the lower right hemithorax as well as a pleural friction rub.

Treatment for tuberculosis and oral erythromycin were instituted, with rapid improvement.

On admission, bilirrubin level was 7,6 mg% (conjugated = 6,2 mg%), AST was 47 IU/L, ALT = 27 IU/L, Gama GT 57 IU/L and alcaline phosphatase = 977 IU/L. Initially the chest radiograph showed bilateral alveolar consolidation in the lower lobes and a small right pleural effusion. Later cavitation was present that resolved with treatment.

Serologic titers were: 64 (3rd day of hospitalization) and 2048 (seven days later).

The patient was discharged on the 50th day of hospitalization.

DISCUSSION

Clinical and laboratorial aspects of pneumonia caused by **Legionella sp** are not distinctive.

Respiratory symptoms include: cough, chest pain, sputum and dyspnea[1,9]. All the cases in this study presented consolidation on the chest x-ray film and three cases had pleural effusion. One of the patients in this study had mental alterations and attempted suicide. The presence of altered behaviour can be seen in pneumonia especially in older patients.

Gastrointestinal symptoms like diarrhea, vomiting and abdominal distention were present in this study, but are not considered especially associated with **Legionella sp** infection.

Jaundice was present in two of the five cases studied, along with hepatomegaly. This is an uncommon feature of Legionnaires' Disease and there are two proposed mechanisms to explain it: the presence of a "toxin" similar to a gram-negative endotoxin[7] or, direct liver damage by the bacteria following systemic dissemination. Supporting the latter, **Legionella sp** has been detected in the liver by immunofluorescence[4,8].

Legionella sp is a frequent cause of community-acquired pneumonia in other countries with an incidence of 6.7% in a study comprising 359 cases, only behind **S. pneumoniae** (15.3%) and **H. influenzae** (10.9%)[1]. In another study it was the 4th most frequent cause with 3.8% of the cases, behind **S. pneumoniae** (15.9%), **Mycoplasma pneumoniae** (9.3%) and viral pneumonia[5].

Three of the patients in this study had underlying diseases. Legionnaires' Disease occurs more frequently among patients with an underlying disease mainly: chronic pulmonary disease, diabetes mellitus, alcoholism, renal failure, tumors, hematologic malignancies, immunosupression, hepatic disease and transplants. Only 30% of patients have no underlying disease. The overall mortality is approximately 30% [1,9].

Three of five cases in this study were community-acquired. An outbreak of nosocomial Legionnaires' Disease has been reported in our Hospital[3] and in 1989 the first case of pneumonia caused by **Legionella pneumophila serogroup 1** was described[2]. However very little importance has been given to this agent when community-acquired pneumonia is empirically treated. This study suggests that the real incidence of **Legionella sp** pneumonia in our environment is being underestimated and that further studies should be made to evaluate the extent of the problem[6].

RESUMO

Cinco Casos de Doença dos Legionários Comunitária e Hospitalar em São Paulo, Brasil.

Na última década, a **Legionella sp** tem surgido como uma causa importante de pneumonia, tanto hospitalar quanto comunitária. Depois da detecção de um surto hospitalar numa unidade de Transplantados Renais, amostras de soro estocado em laboratório foram testadas para anticorpos anti-**Legionella pneumophila** sorogrupo 1. Cinco casos de Doença dos Legionários foram revistos. Os aspectos clínicos e laboratoriais eram semelhantes aos esperados em pneumonias de outras etiologias, mas houve a presença de icterícia importante em 2 casos.

Dentre os 5 casos apresentados neste estudo, 2 foram de aquisição nosocomial e 3 foram comunitários. Já foi descrito um surto de infecção hospitalar por **Legionella pneumophila** sorogrupo 1 no nosso meio[3].

Em 1989 foi descrito o primeiro caso de pneumonia por **Legionella pneumophila** no nosso meio[2]. No entanto pouca importância é dada a este agente etiológico quando se considera o tratamento empírico das pneumonias comunitárias.

Este estudo sugere que a real incidência de pneumonia causada por **Legionella sp** está sendo

subestimada e os autores enfatizam a importância de considerar a Doença dos Legionários no tratamento empírico de pneumonias adquiridas na comunidade.

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