Alveolar haemorrhage in a patient with Leptospirosis
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Abstract: Alveolar haemorrhage due to pulmonary vasculitis in the course of leptospirosis, although not uncommon, is rarely included in the differential diagnosis of pulmonary haemorrhagic syndromes. We present a case of a patient, treated in the ICU for leptospira infection, with a late onset of diffuse alveolar haemorrhage. A 68-year-old man was transferred in the ICU after a progressive CNS impairment. His lab tests were indicative for a severe hepatic dysfunction and renal impairment in need of intermittent haemodialysis. A presumptive diagnosis of leptospirosis was done, confirmed later by positive serologies. At the end of the icteric phase and while weaning from mechanical ventilation, multiple episodes of haemoptysis started, resulting in severe deterioration of oxygenation. Chest X-ray showed new bilateral patchy infiltrates and a High Resolution Computed Tomography scan revealed diffuse airspace disease with bilateral ground-glass opacities. Methylprednisolone 1g daily for 3 days, followed by prednisolone, 20 mg every 6 hours, was given. The patient responded with bleeding cessation and successful weaning. Twelve days later he was discharged to the ward improved. Haemorrhagic alveolitis usually occurs at the after the “leptospiremic” period of the disease. The case presented is suggestive of a delayed, post-“immune” onset of symptoms responding well to high dose steroid therapy.

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Key words: leptospirosis, alveolar haemorrhage, vasculitis, steroids

Case report

A 68-year-old man, with free previous history, complaining for fatigue, muscle weakness and fever, was admitted to the hospital. Two days later, he developed an icteric laboratory profile along with abdominal distention, renal impairment and thrombocytopenia. Three days later he was transferred to the ICU, after a progressive CNS impairment with delirium and partial loss of consciousness in need of intubation. Brain, lung and abdomen CT imaging did not show any specific findings, apart from pleural effusion accompanied by atelectasis of the basal pulmonary segments and renal inflammatory enlargement. His lab tests showed severe hepatic dysfunction with a max total bilirubin 10.1 mg/dl (direct component 6.8 mg/dl), low albumin (2 g/dl) and slight liver enzymes elevation, thrombocytopenia of $15 \times 10^9/\mu L$, renal impairment with a serum creatinine of 5 mg/dl and urea of 195 mg/dl (normal values 30-55 mg/dl) and oligoanuria in need of intermittent haemodialysis. His empirical antibiotic treatment included ceftriaxone and clarithromycin for a probable pneumonia and ampicillin/sulbactam after a presumptive diagnosis of leptospirosis, confirmed later by positive serologies. Beside medical, his treatment comprised intermittent haemodialysis, mechanical ventilation and nutritional support.

On the 16th day of his ICU stay, at the end of the icteric phase, with an INR of 1.5 and while on weaning from mechanical ventilation, multiple episodes of haemoptysis started, resulting in mild blood loss but severe deterioration of oxygenation. His lab tests showed severe hepatic dysfunction and renal impairment in need of intermittent haemodialysis. A presumptive diagnosis of leptospirosis was done, confirmed later by positive serologies. At the end of the icteric phase and while weaning from mechanical ventilation, multiple episodes of haemoptysis started, resulting in severe deterioration of oxygenation. Chest X-ray showed new bilateral patchy infiltrates and a High Resolution Computed Tomography scan revealed diffuse airspace disease with bilateral ground-glass opacities. Methylprednisolone 1g daily for 3 days, followed by prednisolone, 20 mg every 6 hours, was given. The patient responded with bleeding cessation and successful weaning. Twelve days later he was discharged to the ward improved. Haemorrhagic alveolitis usually occurs at the after the “leptospiremic” period of the disease. The case presented is suggestive of a delayed, post-“immune” onset of symptoms responding well to high dose steroid therapy.

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Exposure to soil, water or other contaminated material. Direct contact with the urine of infected animals or from animals is its reservoir. Humans become infected from the species Leptospira interrogans, occurs worldwide, but still in need of haemodialysis. He fully resumed his renal function four days later and was discharged from the ward in improved general state and twelve days after the onset of alveolar haemorrhage, he was discharged to the ward in improved general state and two days after the onset of alveolar haemorrhage, he was discharged to the ward in improved general state but still in need of haemodialysis. He fully resumed his renal function four days later and was discharged from the hospital 15 days later.

Discussion

Leptospirosis, a zoonosis caused by spirochetes from the species Leptospira interrogans, occurs worldwide, but still in need of haemodialysis. He fully resumed his renal function four days later and was discharged from the hospital 15 days later.

Leptospirosis produces two general patterns. In the less severe and generally nonfatal form, often called anicteric leptospirosis and accounting for 90% of cases, the illness begins abruptly and includes headache, myalgias, fever, nausea, vomiting. The more severe form of leptospirosis, called icteric leptospirosis or Weil disease, in addition to the above features causes jaundice, renal impairment, and major haemorrhagic complications. Both mild and severe cases often have an initial “leptospiremic” period and a subsequent “immune” phase marked by antibody production and urinary exertion of leptospira.

Pulmonary symptoms occur in both the nonicteric and icteric forms. Many case reports and clinical series document the frequent occurrence of diffuse pulmonary hemorrhage and haemorrhage usually on the 5th-9th day of the disease. The case presented here is suggestive of a delayed, post-immune onset of symptoms, on the 16th day of the disease. Radiographic findings appear as early as 24h after symptoms begin, although more commonly 3 to 9 days later. Three patterns are observed: i) small snowflake-like nodular densities corresponding to areas of alveolar haemorrhage, ii) large confluent consolidations, iii) a diffuse ill-defined ground-glass pattern that may represent resolving haemorrhage.

Leptospira causes disease through a toxin-mediated process by inducing small-vessel vasculitis. The specific toxin responsible remains unknown. Diffuse petechiae involve the lung parenchyma, pleural surfaces and tracheobronchial tree. Microscopic examination usually demonstrates areas of intra-alveolar and interstitial hemorrhage, but other findings, including pulmonary oedema, fibrin deposition, hyaline membrane formation and proliferative fibroblastic reactions are frequent.

Isolates of leptospira acquired from patients suffering from pulmonary haemorrhage have been used in animal studies to develop a similar pulmonary model. Although immunohistochemistry confirmed the presence of large numbers of leptospire in kidney, liver, intestinal tissues, and spleen, few inflammatory cells were seen. In marked contrast, few leptospire were detected in infected haemorrhagic lung tissue. On the other hand, immunofluorescence confirmed the presence of IgM, IgG, IgA and C3 along the alveolar basement membrane, suggesting an autoimmune process as the aetiology of this fatal complication.

Leptospirosis is generally absent from differential diagnoses in reviews on diffuse alveolar hemorrhage. Clinicians should consider this infection, since the clinical features of leptospirosis are nonspecific and the histopathologic findings are similar to other causes of pulmonary capillaritis that produce diffuse alveolar haemorrhage.

References
3. Martinez Garcia MA, de Diego Damia A, Menendez Anicteric leptospirosis and accounting for 90% of cases.
Forthcoming Congresses

1) 3rd World Congress on “Quality in Clinical Practice”
   September 28 - October 1, 2006, Thessaloniki, Greece
   e-mail: geover@otenet.gr
   site: www.qcp-qolcongress.gr

2) 13th Annual International Meeting on Advanced Spine Techniques
   July 12 - 15, 2006, Athens, Greece
   e-mail: Lvarner@broad-water.com

3) 26th International Congress of Applied Psychology
   July 16 - 21, Athens, Greece
   e-mail: info@erasmus.gr

4) 31st Annual Meeting of the International Urogynecological Association
   September 6 - 9, Athens, Greece
   e-mail: iuga@cnc.gr

5) International Congress of Hormonal steroids / Hormones and Cancer
   September 13 - 17, Athens, Greece
   e-mail: info@erasmus.gr

6) 10th Panhellenic Congress on Pathology
   May 23 - 24, Ioannina, Greece
   e-mail: pennyh@triaenatours.gr

7) 2nd Inter - Congress of the European Society of Pathology
   June 24 - 25, Ioannina, Greece
   e-mail: pennyh@triaenatours.gr

8) 16th Congress of the Mediterranean League of Angiology and Vascular Surgery
   June 8 - 12, Crete Island, Greece
   e-mail: info@erasmus.gr

9) The Athens PCOS International Congress
   March 27 - 31, 2006
   Athens, Greece
   e-mail: info@erasmus.gr

10) XVIIth Annual Congress of the European Society of Paediatric Urology
    April 27 - 29, 2006
    Athens, Greece
    e-mail: info@eslu2006.com

11) EuroPRevent 2006,
    May 11 - 12, 2006
    Athens, Greece
    e-mail: georgiak@triaenatours.gr

12) Friendship & Unity, Psychology & Communication
    May 4 - 7, Athens, Greece
    e-mail: appachellas@yahoo.gr

13) International Congress on Cancer, Chemoprevention and Control with Tailored Molecular Targeting
    February 15, Ancient Epidavros, Greece
    e-mail: jng@otenet.gr

14) 4th Panhellenic - Conference of Pediatric Sub - Specialties
    March 18 - 19, 2006
    Athens, Greece

15) International Symposium on Urinary Tract Infection
    June 3 - 24, 2006
    Weimar, Germany

16) 43rd ERA - EDTA Congress
    July 15 - 18, 2006
    Glasgow, Scotland, UK

17) World Transplant Congress 2006
    July 22 - 26, 2006
    Boston, MA, USA
    e-mail: pballinger@ahint.com

18) World Congress on Nephrology 2007
    April 21 - 25, 2007
    Rio de Janeiro, Brazil
    e-mail: info@isn-online.org
    www.isn-online.org

19) 14th Πανελλήνιο Συνέδριο Νεφρολογίας
    Μάιος 31 - Ιούνιος 3, 2006
    Χαλκιδική, Porto Carras