Fatal *Pasteurella multocida* Infection in a Systemic Lupus Erythematosus Patient

We report the case of a 21-year-old white woman who was admitted to the Hospital Santa Maria in Lisbon with the diagnosis of septic shock. The patient had a previous diagnosis of systemic lupus erythematosus (SLE) made 6 years ago upon the appearance of fever lasting more than a month, migrating arthralgia of the hips and knees and rash, which developed after prolonged sunlight exposure on the face and hands. A thorough blood evaluation was performed which revealed the presence of a positive LE test, anti-nuclear antibodies, anti-dsDNA antibodies, lupus anticoagulant and VDRL with a negative TPHA. Steroid therapy was then initiated, but she was admitted to this hospital 5 years later due to repeated episodes of thrombosis of the lower limbs, at which time she refused to continue with any form of specific drug therapy for SLE. After having been treated for the acute thrombotic episode, the patient was discharged and kept on oral anticoagulation.

Two weeks before the present admission, she suffered a cat scratch injury in the left hand. Two days later she complained of a haemorrhagic wound at the site of the injury and painful swelling in her left axilla. She went to a local hospital, where the wound was surgically cleaned and oral erythromycin was prescribed. Three days later she returned to the same hospital with the same complaints and physical signs. At that time blood samples were collected for biochemical and bacteriologic evaluation and antibiotic therapy was changed to cefradin. Despite the medication, she developed a picture of fever, prostration and confusion over the following days. As the results of the bacteriologic tests were not yet available, she was brought to the Hospital Santa Maria and admitted to an ICU.

At the time of admission, the patient was conscious but deeply prostrated and confused. Her skin was sun-tanned and she presented an evident "butterfly-shaped" erythema on her face. Her extremities were cold. Peripheral arterial pulses and arterial blood pressure could not be detected or measured. Respiratory rate was 32/min and axillar temperature was 37.8°C. Cardiac auscultation revealed tachycardia and pulmonary auscultation was normal. The abdomen was diffusely painful on palpation, and although there was no muscular resistance the evaluation of any possible organ enlargement could not be made. There was a wound scar in the left hand, a painful lymphadenopathy in the left axilla and a small haemorrhage on her left heel, which was related to a fall that had occurred some days ago. There were no signs of meningeal inflammation.

The haemoglobin was 6.6 g/dl, the haematocrit was 17.7%, the white blood cell count was 66,000 cells/mm^3 with 91% neutrophils, the platelet count was 80,000 mm^3. Erythrocyte sedimentation rate was 55 mm in the first hour. Prothrombin time was 45.5(13)s and APTT was 100(30)s. Search for fibrin degradation products was negative. Blood urea was 104 mg/dl, the glucose was 148 mg/dl (not fasting), the creatinine was 4.9 mg/dl, the sodium was 134 mmol/l, the potassium was 5.7 mmol/l and the chloride was 81 mmol/l. The SGOT was 140 U, SGPT was 72 U, total bilirubin was 3.75 mg/dl and direct bilirubin was 2.46 mg/dl. Total protein and albumin were 49 g/l and 23 g/l, respectively. The ECG showed only a sinus tachycardia.

The patient's vital parameters were monitored and, after collecting blood and urine specimens for bacteriological examination, therapy was begun including fluid replacement and blood transfusion (washed red blood cells), dopamine infusion, intravenous methylprednisolone administration, oxygen by nasal prong and intravenous antibiotic therapy with dicloxacillin (1g q3h), piperacillin (4g q6h) and amikacin (500 mg q24h with blood level monitoring).

With this therapy we observed a slight improvement in the patient's overall state that lasted for more than 12 h, with a systolic blood pressure of 90 mm Hg and a diuresis averaging 50 cc/h, but less than 24 h after admission her state rapidly worsened as she went in a progressive coma with persistent hypotension, anuria and respiratory distress, and she died 24 h after admission.

Pathological examination showed a large abscess at the left axilla, enlargement of the abdominal lymph nodes with signs of haemorrhage and necrosis, multiple punctiform haemorrhages in the epicardium, endocardium, pleurae, renal parenchyma and ovaries, small verrucous formations in the endocardium near the valvular insertion, left ventricular hypertrophy, numerous erosions of the gastric mucosa with blood filling the stomach and small bowel, hepatomegaly, splenomegaly, haemorrhagic filling of the bronchi and trachea, congestion of the lower lobes of both lungs, serous effusions in all serous cavities and cystic ovaries.

Blood cultures collected at the time of admittance have grown colonies of *Pasteurella multocida* which was sensitive to penicillin.

Serious infections are a frequent cause of morbidity and mortality in SLE patients and have been related to the immune system compromise derived both from the disease itself and from the drugs which are currently used in its treatment [1]. *P. multocida* infections, although quite rare and seldom fatal, can be very serious in this particular pathological context, and should be suspected whenever a cat or a dog wound is reported [2–4]. This patient had a history of recurrent deep venous thrombosis of inferior limbs, a positive lupus anti-coagulant and a positive VDRL with negative TPHA. These findings were consistent with the presence of an anti-phospholipid syndrome associated with her SLE [5]. The clinical presentation, along with the finding of multiple haemorrhages in the pathological examination are consistent with disseminated intra-vascular coagulation (DIC) which often complicates bacterial sepsis and has already been described in fatal *P. multocida* infections [6]. Although the antiphospholipid syndrome could have contributed to the development of DIC, the temporal association with the documented septic state along with the clinical evolution have led the authors to think that it occurred as a consequence of the *P. multocida* infection. Verrucous formations found in the endocardium at pathological examination were probably a manifestation of Liebmann-Sachs endocarditis and may not have contributed in a significant way to the fatal evolution of the patient's condition. The authors think that this case dramatically illustrates the need for an early and correct diagnostic and therapeutic approach of infectious complications in these patients.

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References

1. **Hellmann, D. B., Petri, M, Whiting O, Keef, Q.:** Fatal infections in systemic lupus erythematosus: the role of opportunistic organisms. Medicine 66 (1987) 341.
2. **Francis, D., Holmes, M. A., Brandon, H.:** *Pasteurella multocida* infections after domestic animal bites and scratches. JAMA 233 (1975) 42.
3. **Weber, D. J., Wolfson, J. S., Swartz, M. N., Hooper, D. C.:** *Pasteurella multocida* infections – report of 34 cases and review of the literature. Medicine 63 (1984) 133.
4. **Bertrand, G., Pinon, G., Groussin, P.:** Septicémie à *Pasteurella multocida* révélant un lupus erythémateux aigu disséminé. Rév. Méd. Int. 5 (1984) 354.
5. **Alarcón-Segovia, D., Delezé, M., Oria, C. V., Sánchez-Guerrero, T., Gómez-Pacheco, L., Cabiedes, J., Fernández, L., Ponce De León, S.:** Antiphospholipid antibodies and the antiphospholipid syndrome in SLE. Medicine 68 (1988) 353–365.
6. **Barza, M. J., Schooley, R. T.:** An asplenic woman with evidence of sepsis and diffuse intravascular coagulation after a dog bite. N. Engl. J. Med. 315 (1986) 241.

Book Review

Y. Becker, G. Darai (eds.)
Diagnosis of Human Viruses by Polymerase Chain Reaction Technology
First edition, 425 pages, 48 tables, 72 figures
Springer-Verlag, Berlin, Heidelberg, New York, 1992
Price: DM 168,–

This book provides a detailed description of PCR techniques for diagnosing the important virus infections in man. Most of the chapters are up to date and contain a great deal of practical information on special tests which are usually not found in other textbooks.
The list of authors includes 92 selected international virologists and clinicians with emphasis on some centres specializing in the PCR technique. Concerning systematic virology, the book is composed of seven sections: retroviruses, human hepatitisvirus, human papovavirus, airborne and respiratory viruses, other RNA viruses, and a summary of the current state of knowledge in PCR for the detection of viruses. These sections are divided into 30 chapters and give examples of the most important virus infections within each group. All chapters are introduced by a relatively detailed evaluation of PCR as a tool for diagnosing virus infections.
Because PCR is usually an additional or special diagnostic method, the contributions focus on particular diagnostic situations in which technical details are of importance. The contributions provide detailed information about different primers recommended, which is of value for the beginner in the use of PCR technique. A list of references with citations within the last five years completes the chapters.
The first 20 pages deal with the diagnosis of HIV infections by means of PCR for early diagnosis or in cases of conflicting serological results. In HIV-1 the method is established clinically, whereas in HIV-2 only experimental data are shown. Other human retroviruses are covered in the following 22 pages.
About 50 pages are devoted to PCR in the diagnosis of the different kinds of virus hepatitis, with the exception of hepatitis E. Especially for early detection of HBV-DNA and identification of escape mutants, this contribution is of interest. Another 50 pages deal with different herpesviruses, especially with the early diagnosis of herpes simplex encephalitis, varicella zoster infection in the immunocompromized host, and cytomegalovirus infection in immunocompromized patients or transplant recipients.
PCR in the diagnosis of EBV or HHV6 infection is described in two further chapters.
Three chapters cover the clinical significance of the diagnosis of infections by papilloma virus type 6 and type 11, and polyomaviruses JC and BK by means of PCR. The consensus primers recommended for the detection of different papilloma virus types are unable to discriminate cancer-related and non-cancer-related papilloma viruses. The problem of false positive results in papilloma virus PCR is discussed even in relation to HPV-6 and HPV-11.
Under the heading of "Airborne and Respiratory Viruses" PCR techniques for detection of prenatal rubella, measles virus in subacute sclerosing panencephalitis, influenza virus (for typing), rhinovirus (for typing), parvovirus B 19, coronavirus and adenovirus are described. Adenovirus-specific primers with particular respect to type 40 and type 41 are recommended for routine diagnosis in gastroenteritis of younger children. The detection of other adenovirus subgenera by nested primers is cited.
The section "Disease Causing RNA Viruses" deals with the detection of enterovirus in meningitis or myocarditis with respect to the heterogenicity of the genotypes. Other chapters give information on PCR techniques in the diagnosis of infections by rotavirus, flavivirus, hantavirus, and rabies virus. These reports are of special value since for some of these viruses a practicable method for virus detection does not exist.
This book should be successful in giving an up-to-date overview of this rapidly developing subject and especially the beginner in the employment of PCR techniques will find much valuable information.

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