

Lemierre's Syndrome : A Case Report

Wei-En Chang, and Lian-Shan Wu

Department of Internal Medicine, Hualien Armed Forces General Hospital

Abstract

Lemierre's syndrome, which has been uncommon in the antimicrobial era, is an acute oropharyngeal infection with secondary septic thrombophlebitis of the internal jugular vein and frequent metastatic infections. This disease usually affects young adults. A typical clinical triad is pharyngitis, a tender, swollen neck, and pulmonary infiltration. We present a case of Lemierre's syndrome in a 23-year-old man who was admitted for hypertensive crisis and congestive heart failure. Diagnosis was made on clinical features, Doppler ultrasonography and computed tomography of the neck. Through antibiotic and anticoagulant therapy, the disease was treated successfully. Similar cases have been reported elsewhere throughout the 1990's, and may be increasing in incidence due to a reduced use of antibiotics for the treatment of pharyngitis. Since limitations to antibiotic use in the treatment of upper respiratory infections are growing annually at present in the Taiwanese medical system, this kind of case may become more frequent. Therefore, we hope this case will attract clinicians' attention. (J Intern Med Taiwan 2007; 18: 287- 292)

Key Words : Lemierre's syndrome, Doppler Ultrasonography, Computed Tomography

Introduction

Lemierre's syndrome is named after Andre Lemierre, professor of bacteriology at the Claude Bernard Hospital in Paris, after his review of 20 cases was published in the Lancet in 1936. Before the era of antibiotics, the prognosis was extremely poor and only 2 of Lemierre's 20 patients survived. The disease is an acute oropharyngeal infection with supuration of the lateral pharyngeal space, bacteremia, and septic thrombophlebitis of the internal jugular vein, causing septic embolism with metastatic infection¹. Patients initially suffer from fever, sore throat

and complain of tenderness or swelling of the lateral side of the neck. Metastatic infection, particularly pleuropulmonary, is common and a major cause of morbidity². The detection of internal jugular vein thrombosis is made easy by Doppler ultrasonography and computed tomography of the neck with contrast. Here, we present a 23-year-old man who was diagnosed with Lemierre's syndrome.

Case Report

This 23-year-old man had a history of hypertension for two years without regular drug control.

Correspondence and requests for reprints : Dr. Wei-En Chang

Address : Department of Internal Medicine, Hualien Armed Forces General Hospital. No. 163, Jiali Rd., Sincheng Township, Hualien County 971, Taiwan (R.O.C)

He was a soldier and heavy smoker. His father also had a history of hypertension. The patient had not taken any antihypertensives over a month prior to admission. Dyspnea, intermittent chest tightness, paroxysmal nocturnal dyspnea and edema of both legs persisted for two weeks. He then presented at Hualien Armed Forces General Hospital and was admitted for further management.

On admission, his height was 178 cm and weight was 129 kg, with body mass index 40.7 kg/m². His blood pressure was 189/99 mmHg, pulse rate was 112 beats per minute and respiratory rate was 24 breaths per minute. Physical examination found crackles in both lungs, a grade 1/6 systolic murmur over the apex, and grade II pitting edema over both lower legs. The laboratory results were as follows: White blood cells 10.02(10³/ul), Hemoglobin 13.7 g/dl, Platelets 398(10³/ul), Sodium 131.5 mmol/L, Potassium 3.70 mmol/L, Aspartate aminotransferase 21 IU/L, Alanine aminotransferase 13 IU/L, Blood urea nitrogen 14.6 mg/dl, Creatinine 1.2 mg/dl, Cholesterol 145 mg/dl, Triglyceride 71 mg/dl, Creatine kinase 179 IU/L, Creatine kinase-MB 30 IU/L, Troponin-I 0.8 ng/ml, Prothrombin time 13.8/12.9 seconds, partial thromboplastin time 24.9/29.4 seconds. Urine showed 4+ protein, but no other abnormal findings. Electrocardiography showed sinus tachycardia and left ventricle hypertrophy, no ST segment elevation or depression and no T wave inversion. Chest X-ray revealed increased lung markings, cardiomegaly and bilateral engorgement of central pulmonary vessels. Echocardiography showed hypertrophic cardiomyopathy with congestive heart failure. The daily loss of urinary protein was 3791.5 mg. Initial diagnoses were hypertensive crisis, congestive heart failure and morbid obesity. A beta-adrenergic antagonist, an angiotensin-converting enzyme inhibitor, nitroglycerin and diuretics were prescribed. Symptoms and signs improved gradually.

On the tenth day of admission, the patient complained of fever, a productive cough, a sore throat and

right-sided neck pain with swelling. The patient had no previous central line insertion. His body temperature was 38.5 °C. Physical examination showed congestion over the pharyngeal wall, tenderness with



Fig.1.Chest X-ray revealed infiltration over the left lower lung field

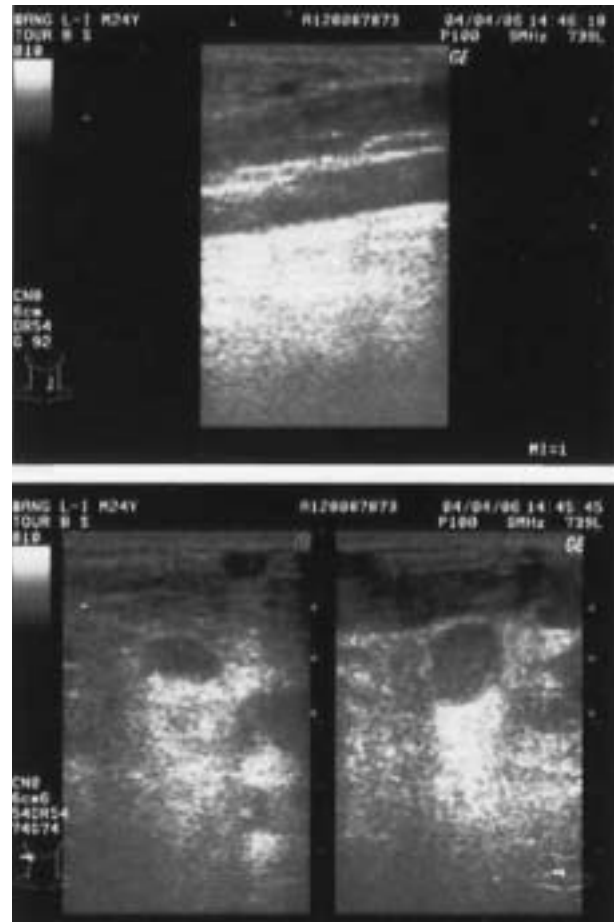


Fig.2.Doppler ultrasonography of neck revealed thrombosis (near total occlusion) in the right jugular vein

swelling over the right side of the neck and fine crackles in the left lower lung zone. The laboratory results were as follows: White blood cells $12.13(10^3/\text{ul})$, Neutrophils 81.8%, Lymphocytes 10.3%, C-reactive protein 7.2 mg/dl. Chest X-ray revealed infiltration over the left lower lung field (Figure 1). Antibiotic therapy with ampicillin-subactam was prescribed. Two days later, Doppler ultrasonography of the neck was performed, revealing thrombosis (near total occlusion) in the right jugular vein (Figure 2) and multiple enlarged nodes in the right side of neck. Lemierre's syndrome was diagnosed.

On the fifteenth day, fever subsided but right-

sided neck pain with swelling persisted. Disseminated intravascular coagulation was diagnosed on laboratory results: Prothrombin time 20.7/12.0 seconds, Partial thromboplastin time 27.1/31.0 seconds, Fibrin degradation products 10-40 ug/ml, D-Dimer 0.4-0.8 ug/ml, Fibrinogen 453 mg/dl. Throat, sputum and blood cultures all showed no growth. Computed tomography of the neck with contrast was performed, revealing thrombosis in the right common jugular vein and superior vena cava (Figure 3), and multiple enlarged nodes in the right side of the neck. Antibiotic therapy was adjusted to ceftriaxone and metronidazole. Low molecular weight heparin was also administered. Two weeks later, the right-sided neck pain with swelling resolved completely. At discharge, the patient was prescribed oral amoxicillin-

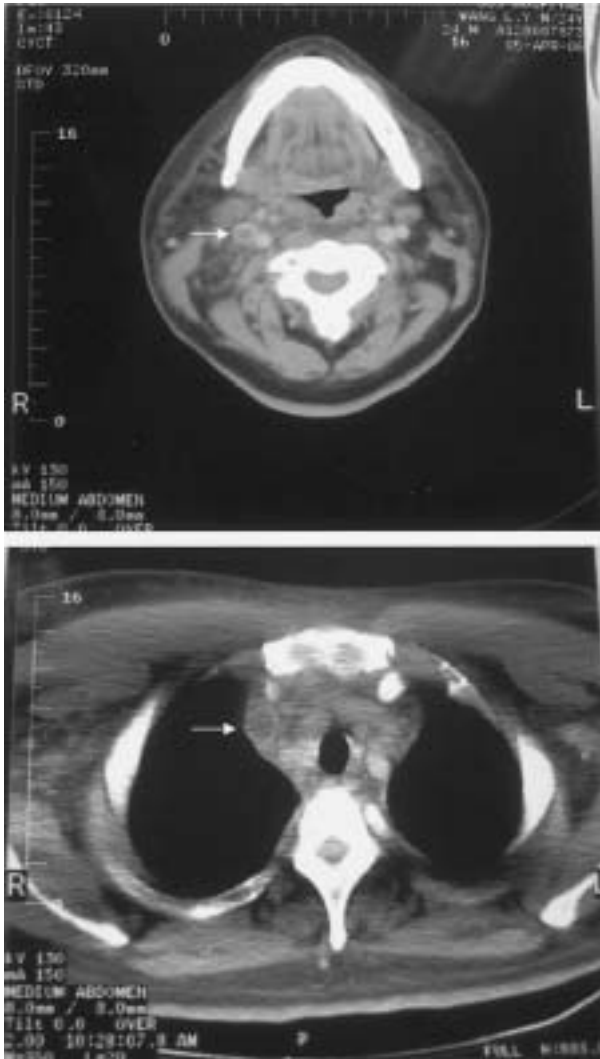


Fig.3.Computer tomography of neck with contrast revealed thrombosis in the right common jugular vein and superior vena cava

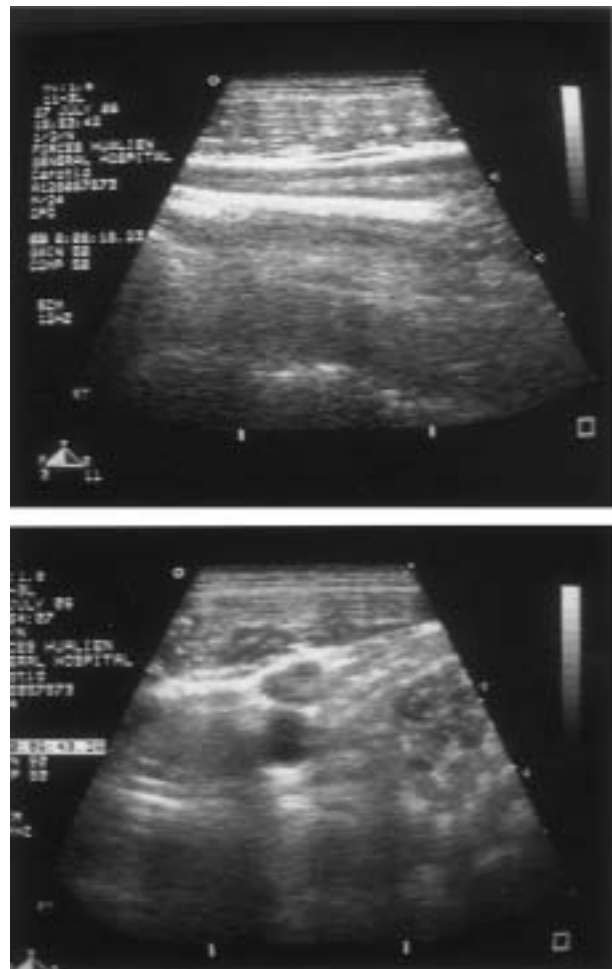


Fig.4.Follow-up Doppler ultrasonography of the neck revealed less thrombosis in the right jugular vein

clavulanate for one week and aspirin for three months. Follow-up Doppler ultrasonography of the neck revealed less thrombosis in the right jugular vein (Figure 4).

Discussion

Lemierre's syndrome (also called postanginal septicemia) is caused by an acute oropharyngeal infection with secondary septic thrombophlebitis of the internal jugular vein, frequently complicated by metastatic infections. It was first reported by Courmont and Cade in 1900³, although the syndrome was best characterized by Lemierre in 1936 from a review of 20 cases¹. In the pre-antibiotic era it was not uncommon and followed a fulminant, usually fatal course over 7 to 15 days. Since the introduction of antibiotics and their widespread use for the treatment of throat infections, there has been a substantial decrease in the incidence of postanginal septicemia. Because of this, the syndrome is frequently overlooked when it appears today². The disease usually affects young adults and an incidence of one per million per year has been reported⁴. Oral anaerobes, particularly *Fusobacterium necrophorum*, are the most frequently isolated and invasion usually progresses from oral disease, such as bacterial tonsillitis, Epstein-Barr virus infection, or dental disease².

The palatine tonsils and peritonsillar tissue are the primary source of infection in the majority of cases, although pharyngitis, parotitis, otitis media, sinusitis, odontogenic infection and mastoiditis have been described as causes of this syndrome. Infection of the lateral pharyngeal space may result from these sources and can cause complications such as thrombophlebitis of internal jugular vein and severe sepsis with frequent metastatic infections^{2,5}. The reason for *F. necrophorum* becoming invasive is unknown. Some authors suggest primary viral throat infection as a possible risk factor for Lemierre's syndrome². Since nicotine can enhance periodontopathogen toxins, smoking might be another factor that increases the possibility of ag-

gressive oropharyngeal infection by anaerobes⁶.

The myriad manifestations of Lemierre's syndrome often complicate its diagnosis and cause a delay in appropriate therapy. Evaluation of the patient with suspected Lemierre's syndrome should begin with a thorough history and physical examination, because abnormalities can be present in more than one organ system. Chest radiography is indicated when pulmonary symptoms are present, and appropriate laboratory studies - including measurements of the complete blood count, and electrolyte and liver enzyme levels - can provide insight into the extent of disease. Blood culture results, both aerobic and anaerobic, should be obtained prior to initiating antibiotic therapy. Imaging of the neck and internal jugular veins can be accomplished in several ways: by venous duplex ultrasonography, computed tomography with contrast (in patients with adequate renal function), magnetic resonance imaging, magnetic resonance venography, nuclear scintigraphy, and gallium-67 scanning⁷.

Venous duplex ultrasonography is accurate and can detect thromboses or abscesses, but its application can be limited by the anatomic location of the clavicle and mandible, as well as variability in the skill of the technician. Although acute thrombus can be missed, venous duplex ultrasonography is an inexpensive method of documenting improvement or resolution of thrombosis⁸. The most common modality employed to diagnose internal jugular vein thrombosis is computed tomography with contrast. Radiographically, the internal jugular vein will be dilated and there will be a low-attenuation intraluminal content and enhancement of the vessel wall and surrounding tissue³. Magnetic resonance imaging provides excellent delineation of soft tissues with the benefit of multiplanar viewing. Some authors attest that magnetic resonance venography is the most accurate and reliable method of detecting venous thrombosis. Neither nuclear scintigraphy nor gallium-67 scanning approaches the reliability and ease of com-

puted tomography, magnetic resonance imaging, or magnetic resonance venography⁹.

Antibiotic therapy should be directed at anaerobic organisms: usually penicillin, clindamycin, metronidazole or chloramphenicol. Prophylactic use of oral antibiotics for all cases of non-beta-hemolytic group A streptococcal infection to prevent Lemierre's syndrome is not considered cost-effective². Beta-lactamases might be produced, so beta-lactamase-resistant antibiotics with anaerobic activity (ticarcillin-clavulanate, ampicillin-sulbactam, etc.) are recommended⁵. The role of anticoagulant is not yet clear, as there have been no controlled trials of its use in Lemierre's syndrome. However, heparin is associated with a quicker resolution of septic pelvic thrombophlebitis¹⁰. The use of anticoagulant is recommended when septic emboli persist despite antibiotics or when there is evidence of retrograde thrombosis propagating to the cavernous sinus. Surgical ligation is rarely performed today being reserved for patients with uncontrolled sepsis and repeated septic emboli despite adequate medical therapy⁵.

In summary, Lemierre's syndrome comprises internal jugular vein thrombosis following oropharyngeal sepsis and is a rare and serious condition. This disease usually affects young adults and typically presents as metastatic infection to lung. Patients initially suffer from fever, sore throat and complain of tenderness or swelling of the side of the neck. Thrombosis is easily demonstrated by Doppler ultrasonography and computed tomography of the neck. The mainstay of treatment is intravenous antibiotics directed at anaerobic microbes. Anticoagulation therapy may be useful if septic emboli persist despite antibiotic therapy.

References

1. Lemierre A. On certain septicemias due to anaerobic organisms. *Lancet* 1936; 1: 701.
2. Sinave CP, Hardy GK, Fardy PW. The Lemierre syndrome: suppurative thrombophlebitis of the internal jugular vein secondary to oropharyngeal infection. *Medicine* 1989; 68: 85-94.
3. Auber AE, Mancuso PA. Lemierre syndrome: magnetic resonance imaging and computed tomographic appearance. *Mil Med* 2000; 165: 638-41.
4. Hagelskjaer LH, Prag J, Malczynski J, et al. Incidence and clinical epidemiology of necrobacillosis, including Lemierre's syndrome, in Denmark 1990-1995. *Eur J Clin Microbiol Infect Dis* 1998; 17: 561-5.
5. Lustig LR, Cusick BC, Cheung SW, Lee KC. Lemierre's syndrome: two cases of postanginal sepsis. *Otolaryngol Head Neck Surg* 1995; 112: 767-72.
6. Sayers NM, Gomes BP, Drucker DB, Blinkhorn AS. Possible lethal enhancement of toxins from putative periodontopathogens by nicotine: implications for periodontal disease. *J Clin Pathol* 1997; 50: 245-9.
7. Moore BA, Dekle C, Werkhaven J. Bilateral Lemierre's syndrome: a case report and literature review. *Ear Nose Throat J* 2002; 81: 234-45.
8. Duffey DC, Billings KR, Eichel BS, Sercarz JA. Internal jugular vein thrombosis. *Ann Otol Rhinol Laryngol* 1995; 104: 899-904.
9. Nakamura S, Sadoshima S, Doi Y, et al. Internal jugular vein thrombosis, Lemierre's syndrome; oropharyngeal infection with antibiotic and anticoagulation therapy - a case report. *Angiology* 2000; 51: 173-7.
10. Josey WE, Stagers SR. Heparin therapy in septic pelvic thrombophlebitis: a study of 45 cases. *Am J Obstet Gynecol* 1974; 120: 228-33.

Lemierre's 症候群：一病例報告

張偉恩 吳蓮山

國軍花蓮總醫院 內科部

摘 要

Lemierre 徵候群在這抗生素普遍使用的時代非常罕見。它是一種急性口咽部感染合併敗血性之內頸靜脈血栓靜脈炎，且時常會轉移。此疾病通常侵犯年輕人。典型之臨床特徵為咽喉炎，頸部腫脹且疼痛及肺部有浸潤。我們報告一例23歲男性病患，起初住院是因高血壓危症及鬱血性心衰竭。診斷是依據臨床症狀，頸部之超音波及電腦斷層。經過抗生素及抗凝血劑投予之後，此疾病已成功地被治療。此類病例，國外文獻報告1990年代有增加之趨勢，主要和臨床醫師被鼓勵減少抗生素治療咽喉炎有關，而台灣醫療體系目前積極限制臨床醫師上呼吸道感染使用抗生素有年，可能增加此類病例，因此藉由本病例提醒臨床醫師注意。