J Korean Radiol Soc 2006;55:263 - 266

Catastrophic Primary Antiphospholipid Syndrome[1]

Dong Hun Kim, M.D., Joo Nam Byun, M.D., Sang Wan Ryu, M.D.[2]

Catastrophic antiphospholipid syndrome (CAPLS) was diagnosed in a 64-year-old male who was admitted to our hospital with dyspnea. The clinical and radiological examinations showed pulmonary thromboembolism, and so thromboembolectomy was performed. Abdominal distention rapidly developed several days later, and the abdominal computed tomography (CT) abdominal scan revealed thrombus within the superior mesenteric artery with small bowel and gall bladder distension. Cholecystectomy and jejunoileostomy were performed, and gall bladder necrosis and small bowel infarction were confirmed. The anticardiolipin antibody was positive. Anticoagulant agents and steroids were administered, but the patient expired 4 weeks after surgery due to acute respiratory distress syndrome (ARDS). We report here on a case of catastrophic APLS with manifestations of pulmonary thromboembolism, rapidly progressing GB necrosis and bowel infarction.

Index words : Antiphopholipid syndrome
Pulmonary arteries, thrombosis
Intestines, infarction

Some patients suffering from antiphospholipid syndrome (APLS) may present with a catastrophic condition characterized by multiple vascular occlusions that often result in death if appropriate treatment is not quickly applied. In the great majority of cases, patients with catastrophic APLS show a spontaneous tendency to develop microvascular thrombosis that affects multiple organs. However, arterial reactivity leading to acute thrombosis after operation or a procedure has rarely been reported on (1, 2). We report here on a case characterized by a succession of thrombotic accidents that occurred during or immediately after arterial angiographies or arterial surgery, and catastrophic arterial reactivity was strongly suspected.

[1]Department of Radiology, Chosun University Hospital
[2]Department of Thoracic and Cardiovascular Surgery, Miraero21 Medical Center
Received March 16, 2006 ; Accepted April 25, 2006
Address reprint requests to : Dong Hun Kim, M.D., Department of Radiology, Chosun University College of Medicine
588 Seoseok-dong, Dong-gu, Gwangju 501-717, Korea
Tel. 82-62-220-3543 Fax. 82-62-228-9061
E-mail: kdhoon@chosun.ac.kr

Case Report

A 64-year-old man was admitted with a 10-day history of dyspnea. On admission, he presented with exertional dyspnea (class IV according to the functional classification of the New York Heart Association). A physical examination revealed a blood pressure of 150/80 mmHg, a pulse of 102 beats/minutes, respiration of 28 breaths/minutes and a body temperature of 36.0℃. Coarse breathing sounds were evident in both lung fields, but the cardiac sounds were normal.

The laboratory findings were as follows: white blood

cell count = 11,900/mm^3, hemoglobin = 10.2 g/L, platelet count = 359,000/ mm^3, BUN/creatine = 33.9/1.8 mg/dl, aPTT = 45.4 sec, PT = 12.4/93.3/1.09 sec/%/INR, CRP = 3.9 gm/dL, fibrinogen = 367 mg/dL, FDP = 12.5 ug/mL and D-dimer = 0.85 mg/dL. Blood coagulation testing proved positive for lupus anticoagulant, but a search for anticardiolipin antibodies proved negative (IgG: 9.7 GPL, n < 20, IgM: 16 MPL, *n* < 20). Other laboratory data revealed no abnormalities. Chest radiographs at admission revealed the presence of cardiomegaly without mediastinal widening, and his electrocardiogram disclosed tachycardia of 100 beats/minutes with no ST-T wave changes. Echocardiography revealed tricuspid regurgitation and pulmonary hypertension, and a CT chest scan showed extensive pulmonary thromboemboli (Fig. 1A). The patient underwent open-thromboembolectomy (Fig. 1B). After several days, his abdomen rapidly distended and a CT abdominal scan revealed thrombi in the upper abdominal aorta, celiac trunk, superior mesenteric artery (SMA), and superior mesenteric vein (SMV), and there was small bowel and gall bladder distension with wall thickening (Fig. 1C). SMA arteriography showed occlusion of the SMA (Fig. 1D). Thrombolysis was undertaken with using urokinase (400,000 IU) and then follow-up angiography showed good patency of the SMA lumen. However, severe abdominal pain and signs of bowel infarction developed a few days later. A follow up abdominal CT scan revealed multivessel thrombi and the progression of small bowel infarction (Fig. 1E). Exploratory laparotomy was performed, and the resected small bowel and gall bladder showed ischemic necrosis. Microscopic findings of the specimens disclosed ischemic necrosis with epithelial sloughing, mucosal destruction, submucosal edema, congestion and extensive neutrophil infiltration.

His postoperative course was dismal: ARDS and multisystemic failure developed, and he died 4 weeks after admission.

Discussion

Antiphospholipid syndrome (APLS) is diagnosed by arterial or venous thrombosis, or recurrent fetal losses, and positive antiphospholipid antibody tests for anticardiolipin antibodies and lupus anticoagulant. Thrombotic disease, fetal losses and transient positive antiphospholipid antibodies (aPL) are common events for APLS patients. When these events occur, APLS should be considered as primary if these events are unassociated with any other underlying disease, or the APLS is secondary when it appears in association with other autoimmune disorders, mainly systemic lupus erythematosus (SLE). Also, this syndrome can be associated with other conditions such as vasculitic syndromes, carcinoma, drug administration and etc. An international workshop recently issued a consensus statement on the classification criteria of APLS. Pulmonary manifestations, including pulmonary embolism and infarction, pulmonary hypertension, adult respiratory distress syndrome (ARDS), intra-alveolar hemorrhage and primary thrombosis of lung vessels (both large and small), as well as pulmonary capillaritis, may be associated with this syndrome in both its primary and secondary forms (3).

All the vasculopathies of APLS may be inherent to the syndrome itself, and APLS can present with protean vascular abnormalities without any associated vasculitis. The vascular pathophysiology remains unclear. Numerous mechanisms have also been implicated in the thrombosis, including the binding of antiphospholipid antibodies to platelets and endothelial cells and this leads to the induction of procoagulant proteins or adhesion molecules by these cells (4). Moreover, endothelial cell disruption, which occurs in vasculitis, may produce immunologically hidden antigens and so stimulate anti-endothelial antibodies, which may be part of the spectrum of APLS antibodies (5).

Single thrombotic events occur in the vast majority of APLS patients, and when recurrent events do occur, they may do so many months or even years after the initial vascular occlusion. However, some reports published over the past years have shown that some patients, albeit a small minority, may present with or develop an acutely catastrophic or devastating syndrome characterized by multiple vascular occlusions that often results in death (1, 6 - 9). Catastrophic antiphospholipid syndrome (CAPLS) is a rare and severe variant of APLS that is characterized by multiple widespread microvascular occlusions (7, 8). CAPLS presents as multiorgan failure within a short time sequence with various other manifestations, including disseminated intravascular coagulation (DIC), thrombocyto-penia and hemolytic anemia. 60% of these patients appear to have developed CAPLS following trigger factors, for example, infections, trauma, anticoagulation problems, neoplasia, obstetric, lupus and others (7). Twenty-five of the 50 patients reviewed by Asherson et al (9) died despite intensive treatment, and this treatment included corticosteroids,

plasmapheresis and cyclophosphamide.

Certain differences have emerged from a review of 10 patients (6), and these differences appear to distinguish this minority group of patients who suffer from CAPLS from the overwhelming majority of APLS patients. The major differences appeared to be large vessel, peripheral venous and arterial involvement, and these things were relatively uncommon in the patients suffering with

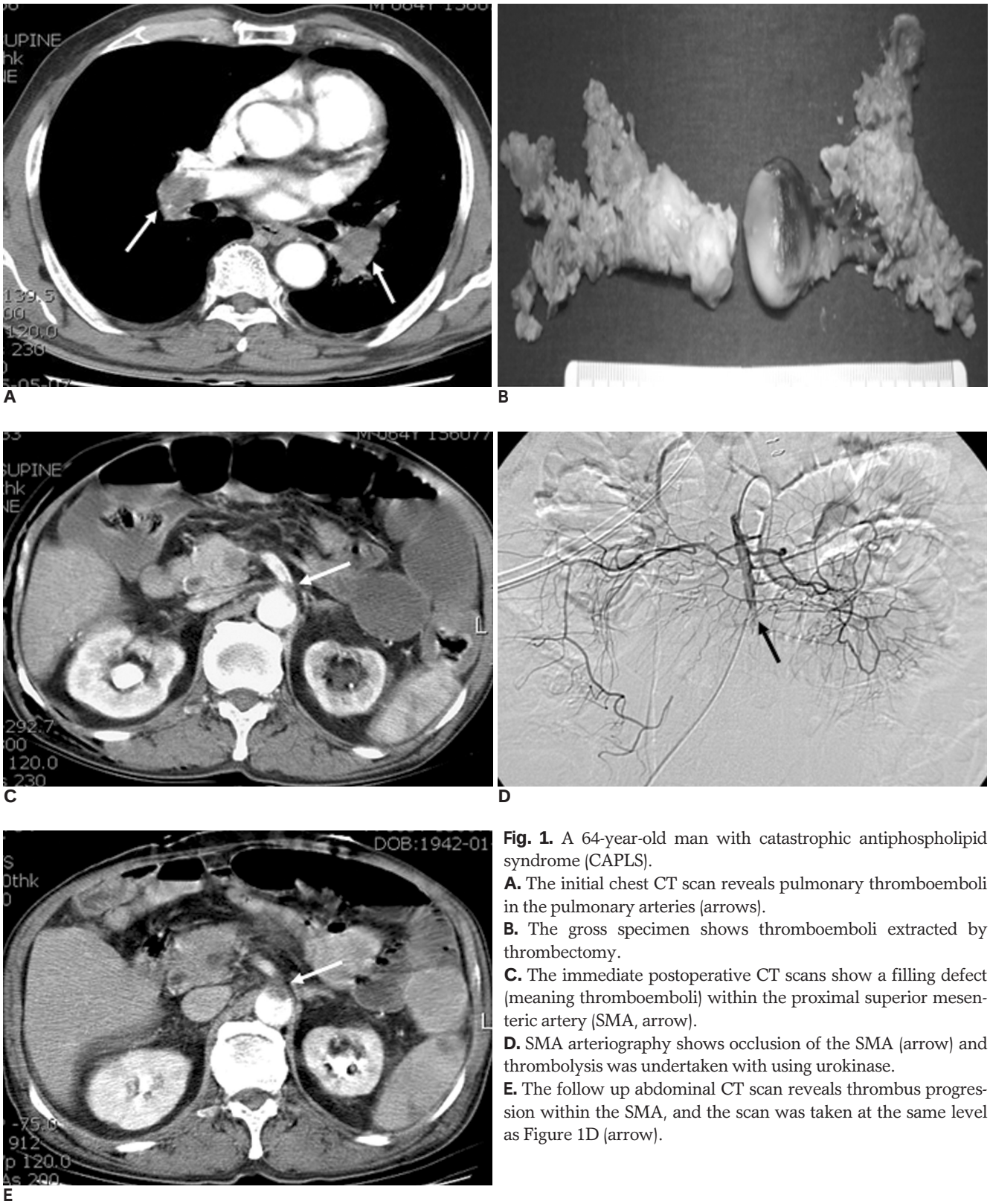

Fig. 1. A 64-year-old man with catastrophic antiphospholipid syndrome (CAPLS).
A. The initial chest CT scan reveals pulmonary thromboemboli in the pulmonary arteries (arrows).
B. The gross specimen shows thromboemboli extracted by thrombectomy.
C. The immediate postoperative CT scans show a filling defect (meaning thromboemboli) within the proximal superior mesenteric artery (SMA, arrow).
D. SMA arteriography shows occlusion of the SMA (arrow) and thrombolysis was undertaken with using urokinase.
E. The follow up abdominal CT scan reveals thrombus progression within the SMA, and the scan was taken at the same level as Figure 1D (arrow).

CAPLS, who seemed to demonstrate small vessel (microvascular thrombosis) involvement that affected various combinations of multiple organs such as the lungs, heart, brain, kidney, liver, adrenal glands or gastrointestinal tract.

Many patients with APLS remain stable for long periods, but an acute episode may unpredictably proceed to a catastrophic state. Aggressive multi-therapy with anticoagulation, steroids, plasmapheresis or intravenous gammaglobulin leads to a survival rate of about 70% (9). However, the treatment of CAPLS is not currently standardized, and a review of 10 cases (6) and a more recent analysis of 31 cases (5) have suggested that the use of plasmapheresis is associated with an improved outcome. We also believe that this combination should probably be used in patients with catastrophic APLS; however, our case did not demonstrate any benefit from the combined treatment.

The prognosis may be poor when the CAPLS is associated with arteriopathies, as described in our case. We conclude that CAPLS is an uncommon, but potentially life-threatening condition that requires a high level of clinical awareness.

References

1. Rey J, Granel B, Disdier P, Morange P, Piquet P, Serratrice J, et al. Catastrophic arterial reactivity during primary antiphospholipid syndrome-a case report. *Angiology* 1999;50:761-764
2. Ahn SS, Kalunian K, Rosove M, Moore WS. Postoperative thrombotic complications in patients with lupus anticoagulant: increased risk after vascular procedures. *J Vasc Surg* 1988;7:749-756
3. Espinosa G, Cervera R, Font J, Asherson RA. The lung in the antiphospholipid syndrome. *Ann Rheum Dis* 2002;61:195-198
4. Hughes GR. Hughes syndrome: antiphospholipid syndrome. *J R Coll Physicians Lond* 1998;32:260-264
5. Dongola NA, Foord KD. Angiographic features associated with antiphospholipid syndrome. *Br J Radiol* 2000;73:1215-1218
6. Asherson RA. The catastrophic antiphospholipid syndrome. *J Rheumatol* 1992;19:508-512
7. Asherson RA. Multiorgan failure and antiphospholipid antibodies: the catastrophic antiphospholipid (Asherson's) syndrome. *Immunology* 2005;210:727-733
8. Thuerl C, Altehoefer C, Spyridonidis A, Laubenberger J. Imaging findings in the rare catastrophic variant of the primary antiphospholipid syndrome. *Eur Radiol* 2002;12:545-548
9. Asherson RA, Cervera R, Piette JC, Font J, Lie JT, Burcoglu A, et al. Catastrophic antiphospholipid syndrome. Clinical and laboratory features of 50 patients. *Medicine* 1998;77:195-207

대한영상의학회지 2006;55:263 - 266

파국 일차성 항인지질 증후군[1]

[1]조선대학교 부속병원 영상의학과학교실
[2]미래로 21병원 흉부외과

김동훈 · 변주남 · 류상완[2]

호흡부전을 주소로 내원한 64세 남자환자에서 파국 항인지질 증후군이 진단되었다. 임상학적, 영상학적 검사에서 폐동맥 색전증으로 진단되었고 색전제거술이 시행되었다. 수일 후 복부팽대가 급속히 진행되었고 복부 CT 상 상장간동맥내에 혈전과 소장, 담낭의 팽대가 있었다. 담낭절제술과 공회장문합술이 시행되었고 담낭과 절제된 소장의 괴사가 확진되었다. 항카디오리핀 항체는 양성이었다. 항응고제와 스테로이드제제가 투여되었지만 환자는 급성호흡부전증으로 사망하였다. 따라서 저자들은 폐동맥 색전증과 빠르게 진행된 담낭 및 소장괴사를 동반한 파국 항인지질 증후군을 보고한다.