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Case report

Successful stent implantation in a rural area on a patient with superior vena cava syndrome through specialist intervention: a case report

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Abstract

Superior vena cava syndrome (SVCS), which is characterized by facial edema and congestion of the head, upper extremities, and neck, is a life-threatening oncologic emergency. Although a combination of chemotherapy and radiation therapy has been considered as the standard treatment for SVCS, stent implantation to the superior vena cava (SVC) has been recently developed to alleviate edema or dyspnea caused by SVCS. On the other hand, stent implantation to the SVC requires skilled interventional cardiologists or radiologists. In general, those specialists reside in university hospitals or large hospitals in an urban area. In this case report, an 86-year-old man underwent stent implantation to a stenosed SVC in a rural area. Because the patient refused the transfer to the core, urban hospital, we invited a skilled interventional cardiologist from the core hospital and performed stent implantation to the SVC in a small, rural hospital. It is generally difficult to perform stent implantation for SVCS in a small hospital, because skilled operators in the field of interventional cardiology or radiology do not usually perform operations in smaller facilities. Our case indicates the importance of cooperation between rural generalists and urban specialists.

Key words: superior vena cava syndrome, stent implantation, oncologic emergency, Rural and remote area

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Introduction

Superior vena cava syndrome (SVCS), which is characterized by facial edema and congestion of head, upper extremities and neck, is a life-threatening oncologic emergency[1)]. SVCS is caused by obstruction or stenosis in the superior vena cava (SVC) following the development of malignant tumors or lymph nodes[2)]. Although a combination of chemotherapy and radiation therapy has been considered as the standard treatment for SVCS[3)], stent implantation to SVC has been recently developed to alleviate edema or dyspnea caused by SVCS. However, stent implantation to SVC requires skilled interventional cardiologists or radiologists. In general, those specialists practice in university hospitals or large urban hospitals. Therefore, whenever patients develop SVCS in a rural area, they would have to be transferred to those large hospitals to undergo stent implantation. We present here a case with SVCS successfully treated by stent implantation in a small, rural hospital.

Case Report

An 86-year-old man with recurrent small cell lung carcinoma and chronic obstructive pulmonary disease presented with worsening facial edema, shortness of breath, and wheezing for 3 weeks. His blood pressure (BP), heart rate (HR) and respiratory rate were 141/67 mmHg, 102 beats/min and 18/min, respectively. Physical examination revealed cutaneous vein distention on the chest without lower extremity edema. Performance status was assessed as grade 3. Contrast-enhanced computed tomography (CT) revealed a massive lung carcinoma compressing the SVC, which re-

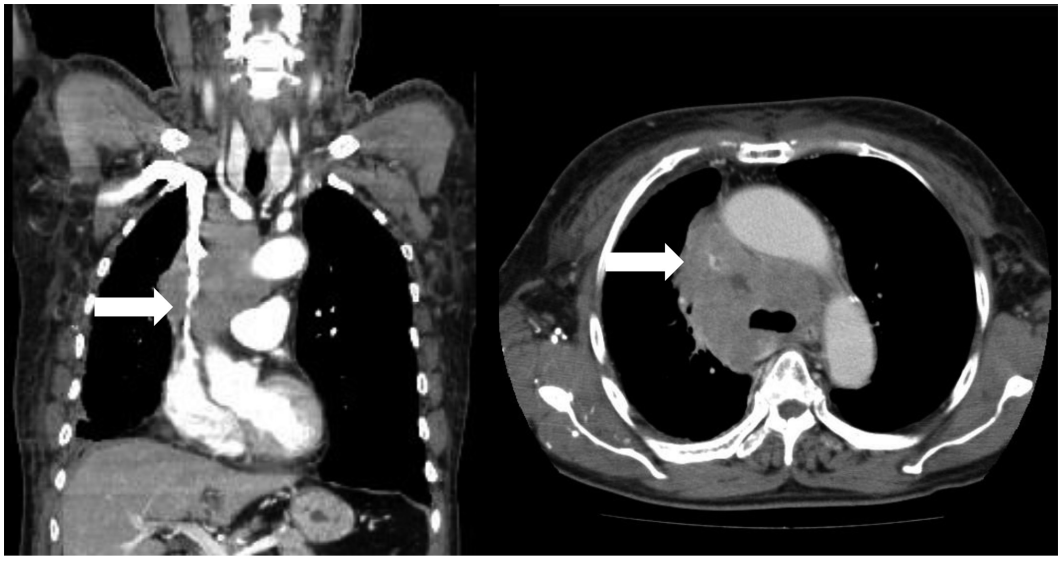

Figure 1 Contrast enhanced computed tomography showed that superior vena cava (SVC) was compressed by a massive lung carcinoma (the diameter of the most stenosed SVC was 1 mm).

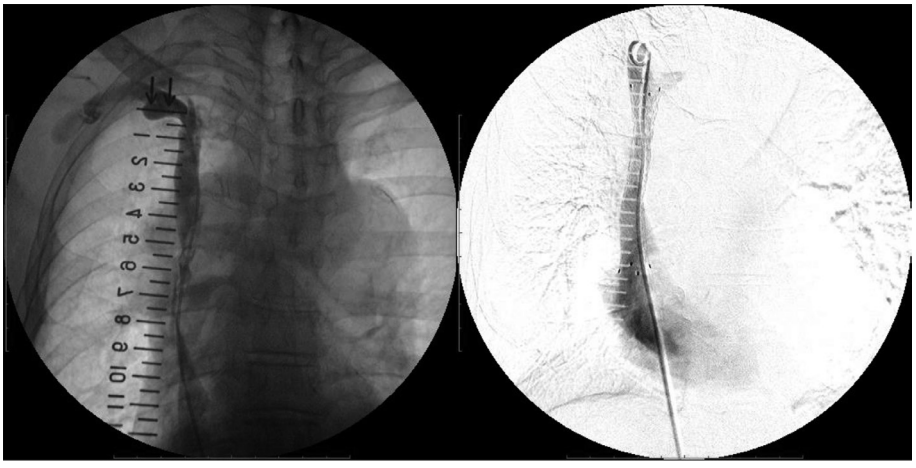

Figure 2 Superior vena cava (SVC) stent (E-LIMINEXX φ12 × 80 mm) was directly deployed through a trans-femoral vein approach. Although the mean pressure of superior vena cava was 27 mmHg before stenting, the mean pressure of SVC following stent implantation decreased to 10 mmHg. There were no complications during stent implantation.

sulted in the stenosis of the SVC (Figure 1). We diagnosed him as SVCS due to his recurrent small cell lung carcinoma. His oxygen level and carbon dioxide level were 67.2 torr and 50 torr (room air), respectively. He was admitted to our rural hospital to alleviate his progressive shortness of breath and facial edema. Because he and his family refused to have chemotherapy and radiation therapy, stent implantation to the stenosed SVC was the most recommended intervention to alleviate his symptoms. Subsequently, we recommended him for transfer to a large urban or university hospital, because skilled interventional cardiologists or radiologists were not available in our hospital. However, they refused to be transferred to a core hospital as the hospital was remote for him and his family. Since other treatment options such as diuretics were ineffective for his symptoms, we decided to perform stent implantation in our hospital. We invited a skilled interventional cardiologist from a large urban hospital to come to our hospital as our hospital was equipped enough to be able to implant a stent to his SVC without complications (Figure 2). His symptoms improved rapidly fol-

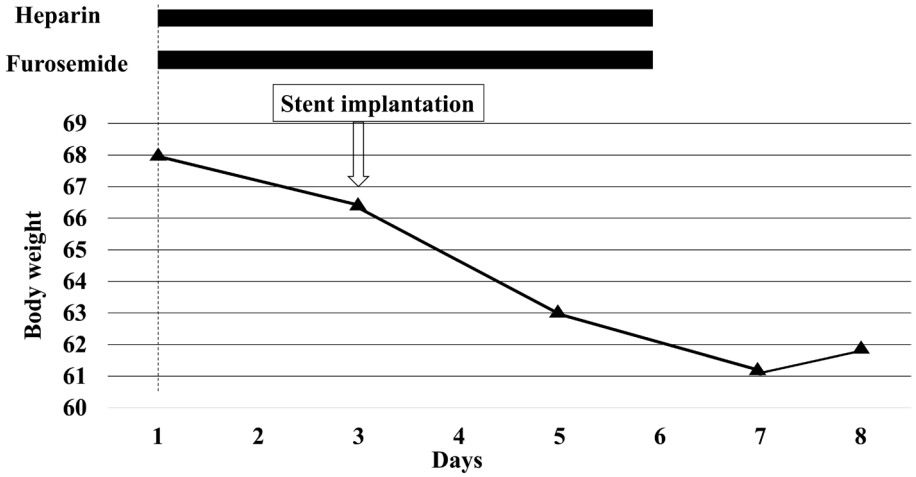

Figure 3 The clinical course. Furosemide (20 mg/day) was used to improve his symptoms, and heparin was used to prevent a thrombus formation. After stent implantation, his body weight significantly decreased, and his symptoms dramatically improved. Furosemide administration was halted after stent implantation.

lowing the stent implantation (Figure 3). His facial edema had almost completely resolved, and his carbon dioxide level decreased to 41.5 torr (room air).

Discussion

We presented a case suffering from SVCS in a rural area. Because the patient refused to be transferred to the core, urban hospital, we invited a skilled interventional cardiologist from the core hospital and performed stent implantation to his SVC in our small, rural hospital. It is generally difficult to perform stent implantation for SVCS in a small hospital as skilled operators in the field of interventional cardiology or radiology do not operate in such hospitals. Our case indicates the importance of cooperation between rural generalists and urban specialists.

This study broaches the idea that stent implantation to an SVC may be performed in a small, rural hospital. In general, medical resources, including human resources and medical equipment, are sparser in small rural hospitals[4, 5]. While it is unrealistic to purchase expensive medical equipment, like a radiation therapy apparatus, to use on a few patients in rural hospitals, the option of inviting specialists for a short period of time would cost much less provided that the procedures can be performed with the usual, non-specialized equipment found in rural hospitals. Stent implantation to SVC, subsequently, only requires a fluoroscopic apparatus and no other specialized medical equipment[6]. Therefore, inviting specialists for a day would be a viable option in rural hospitals, as long as a fluoroscopic apparatus is available.

Advantages of inviting specialists from a core hospital in urban areas include patient's familiarity with his environment. Because sudden changes from a familiar environment is associated with cognitive decline in the elderly[7], inviting specialists may preserve the patient's cognitive function as well as his quality of life. Furthermore, the patient's family would have easier access to the nearby hospital, and would subsequently tend to visit more frequently than when the hospital is remote. This may be beneficial to both patient and family. However, on the other hand, there is an increase in technical challenge for the specialist as he or she has to perform the procedure in an unfamiliar environment. Further, a small hospital is less equipped on dealing with unexpected complications. Written informed consent was obtained from patient for the publication of this case report and any accompanying images.

Conflict of interest: The authors declare no conflicts of interest in association with the present study.

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