



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Successful endovascular coil embolization in an elder and asymptomatic case of anomalous systemic arterial supply to the normal basal segment

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ARTICLE INFO

Article history:

Received 22 December 2016

Received in revised form 19 March 2017

Accepted 20 March 2017

Available online 22 March 2017

Keywords:

Anomalous systemic arterial supply to the normal basal segment

Elder

Coil embolization

ABSTRACT

INTRODUCTION: An anomalous systemic arterial supply to the normal basal segment without sequestration is a rare congenital vascular malformation. The discovery age is relatively young, and the most common clinical symptom is hemoptysis due to pulmonary hypertension or heart failure. We herein describe a case of endovascular embolization of in an elderly and asymptomatic patient with an anomalous systemic arterial supply to the normal basal segment.

PRESENTATION OF CASE: An 80-year-old male was referred to our hospital due to an abnormal chest shadow. The patient was diagnosed with an anomalous systemic arterial supply to normal basal segment. We performed coil embolization via the catheterization.

DISCUSSION: The application of coil embolization via catheterization results in a low risk of infection and small burden on the body compared with surgery. There are few report of the coil embolization for an anomalous systemic arterial supply to the normal basal segment. Hence, it is necessary to accumulate additional cases.

CONCLUSION: The outcome of thie case indicates that coil embolization is a very useful treatment method for elderly patients with an anomalous systemic arterial supply to the normal basal segment.

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1. Introduction

An anomalous systemic arterial supply to the normal basal segment is a congenital anomaly characterized by aberrant artery branching from the descending aorta that supplies the basal segment. An anomalous systemic arterial supply to the normal basal segment is classified as being associated with intralobar pulmonary sequestration as Pryce's type I disease [1]. The average discovery age of the disease is 32.0 years old, and there is bloody sputum in approximately 40% of cases [2]. We herein report a case of endovascular coil embolization in an elderly and asymptomatic patient with an anomalous systemic arterial supply to the normal basal segment. This case report has been written in line with the SCARE criteria [3].

2. Presentation of case

An 80-year-old male was referred to our hospital due to an abnormal chest shadow (Fig. 1). He had a systolic murmur, and non-contrast chest computed tomography (CT) showed contact of

the abnormal shadow with the descending aorta (Fig. 2a). Additionally, contrast chest CT showed an aberrant artery arising from the descending aorta (Fig. 2b and c), and aortography showed an aberrant artery flowing in the left S¹⁰ field (Fig. 3). Pulmonary arteriography also showed a pulmonary artery deficiency in the left S¹⁰ field, and bronchoscopy demonstrated that the left B¹⁰ was composed of normal bronchus tissue. The patient was diagnosed with an anomalous systemic arterial supply to normal basal segment. However, he did not consent to undergo any aggressive treatment, and he instead requested to be followed up on an outpatient basis. Nevertheless, on chest computed tomography performed 18 months later, the diameter of the abnormal vessel grew slightly and we thought that it was necessary to treat the lesion. Therefore, we performed coil embolization via the catheterization. The coil embolization procedure was performed, and the peripheral pulmonary artery was occluded. The patient's post-coil embolization course was uneventful, and he was discharged three days after undergoing coil embolization (Fig. 4). There were no signs of hemoptysis for three months.

3. Discussion

The characteristic imaging findings of the anomaly described in this case include an anomalous systemic artery arising from the

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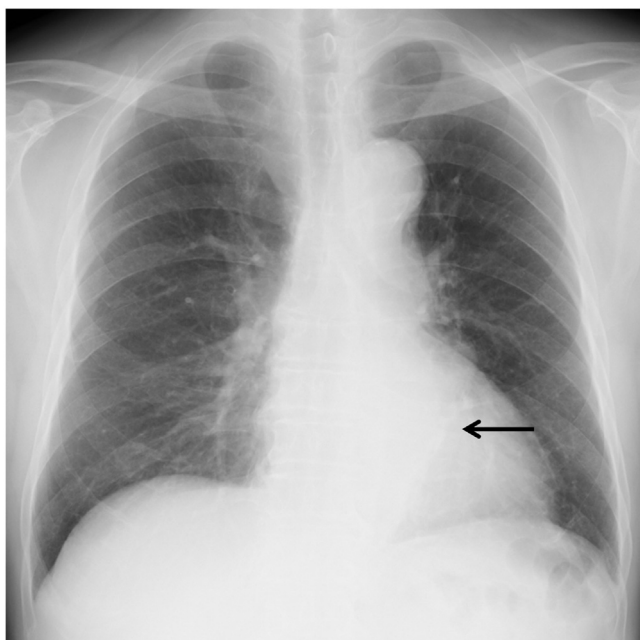


Fig. 1. Chest X-ray showed an abnormal shadow in the left lung field (arrow).

thoracic aorta supplying the normal basal segment of the lower lobe, with the absence of a pulmonary arterial supply and a normal bronchial system [4]. Pryce [1], classified pulmonary sequestration into three groups, and an anomalous systemic arterial supply to the normal basal segment is equivalent to Pryce I type intralobar pulmonary sequestration. In the current case, an abnormal blood vessel flowed into the area of perfusion at left A¹⁰ from the descending aorta, and we diagnosed the patient with an anomalous systemic arterial supply to the normal basal segment. According to Higuchi et al. [2], the discovery age is 0–71 years old, the average age is 32.0 years old and the sex ratio is approximately 1:1. There are many onset sites within the left side of the thoracic cavity. Overall, approximately 40% of patients show bloody sputum, and approximately 16% of the cases are founded to involve abnormal chest shadows. In our case, we heard a continuous murmur on the patient's left back; however, he was elderly, and there was a possibility that we may have overlooked the presence of valvular disease.

In such cases, the supplied blood flows back to the pulmonary vein through an abnormal blood vessel arising from the descending aorta. Therefore, an anomalous systemic arterial supply to the normal basal segment presents with a left–left shunt, then subsequently presents with pulmonary hypertension developing into



Fig. 3. Aortography showed an aberrant artery flowing into the left S¹⁰ field.

heart failure. As the disease progresses, bloody sputum is noted due to pulmonary hypertension. Therefore, the discovery average age is often comparatively young. However, in our case, there was no bloody sputum at 80 years of age. Because the abnormal blood vessel showed only a small shunt in left A¹⁰, we consider that neither pulmonary hypertension nor heart failure was present. Furthermore, only the presence of A¹⁰ arising from the aorta in the anomalous systemic arterial supply to the normal basal segment is very unusual. To the best of our knowledge, an anomalous systemic arterial supply to the normal basal segment in a patient 80 years of age or older has not been previously reported, and this case is therefore a very valuable case.

An anomalous systemic arterial supply to the normal basal segment requires the adaptation of surgery up on discovery. Recently, there have also been reports of the use of thoracoscopic surgery [5] and vascular blockade technique with clips [6]. Furthermore, intravascular embolization with a coil was reported [7]. Transcatheter arterial embolisation was reported to prove effective therapeutic approaches in young infants without a need for surgical lobectomy [8] and to be a minimally invasive, safe, and valuable

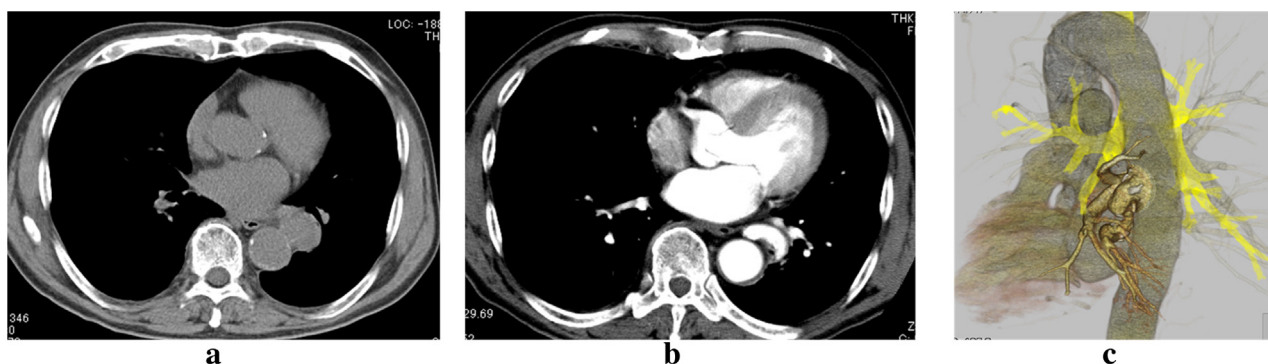


Fig. 2. a: Non-contrast chest CT showed an abnormal shadow making contact with the descending aorta. b, c: Contrast-enhanced chest CT showed an aberrant artery arising from the descending aorta.

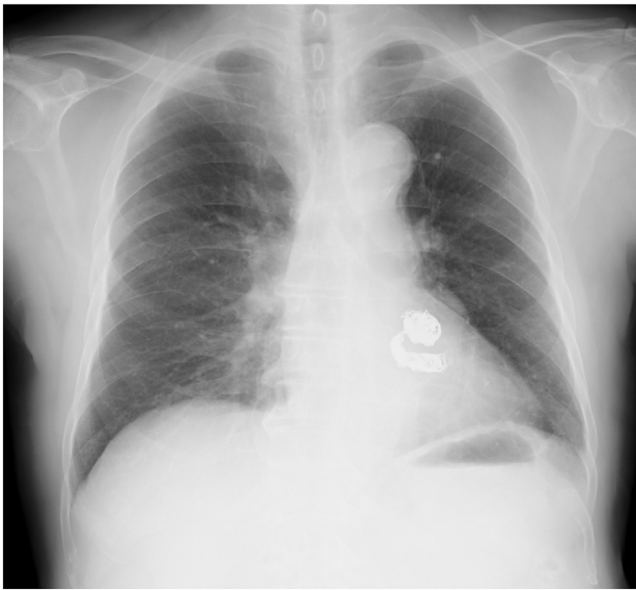


Fig. 4. Chest X-ray on discharge. Coil embolization was performed in the left field.

method in anomalous systemic arterial supply to the basal segment of the lung [9].

In the current case, we performed coil embolization via the catheterization. The application of coil embolization via catheterization results in a low risk of infection and small burden on the body compared with surgery. There were no serious complications among their cases of an anomalous systemic arterial supply to the normal basal segment treated with coil embolization [10]. In the present case, there were no serious complications or side effects. There are few reports of the coil embolization for an anomalous systemic arterial supply to the normal basal segment. Hence, it is necessary to accumulate additional cases.

4. Conclusion

We performed endovascular coil embolization in an elderly and asymptomatic patient with an anomalous systemic arterial supply to the normal basal segment. The outcome of this case indicates that coil embolization is a very useful treatment method for elderly patients with an anomalous systemic arterial supply to the normal basal segment.

Conflict of interest

The authors do not have a conflict of interest.

Funding

None.

Ethical approval

We got ethical approval from ethical committee of Kanazawa Medical University, Japan.

Consent

We had informed consent from this patients for writing this paper.

Authors contribution

Yuichiro Machida: study design, writing.
 Nozomu Motono: other.
 Takuma Matsui: other.
 Katsuo Usuda: other.
 Hidetaka Uramoto: study design.

Guarantor

Hidetaka Uramoto.

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