Atrial Septal Defect of the Ostium Secundum Type in A 101-Year-Old Patient

A Case Report

Takahiro Matsumoto,¹ MD, Eiji Tamiya,¹ MD, Tatsuji Kanoh,¹ MD, Tomosato Takabe,¹ MD, Ken-ichi Kuremoto,¹ MD, Takashi Kamiyama,¹ MD, Shoichi Yamamoto,¹ MD and Hiroyuki Daida,² MD

Summary

The patient was a 101-year-old woman whose chief complaints were difficulty of breathing and high fever. The history of the present illness included paroxysmal atrial flutter which was untreated, but she had not developed heart failure.

At admission, auscultation of the chest revealed moist rales and systolic murmur but did not clearly show the presence of fixed splitting of S2. X-ray examination of the chest showed a cardiothoracic ratio of 61%, moderate bilateral pulmonary congestion, pleural fluid, and enlarged pulmonary arteries. Electrocardiogram showed atrial flutter with a heart rate of approximately 150 beats/minute. Echocardiographic examination revealed an atrial septal defect (ASD) of the ostium secundum type (left to right shunt) and right ventricular pressure 71 mmHg. The diameter of the ASD was approximately 10 mm.

She began receiving an antibiotic and a diuretic immediately after admission, but died on the second day of hospitalization.

This case could be the oldest individual with ASD among those reported to date.

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Key words: Prognosis, Eldest patient, Congenital heart disease

Atrial septal defect (ASD) is the most common congenital heart disease among adults.¹⁾ It does not always cause a heart murmur or any obvious electrocardiographic abnormality. Thus, it might not be detected until the individuals are elderly.²⁾ The patient was a 101-year-old woman with an ASD of the ostium secundum type (left to right shunt). The present report was made because the patient could be the oldest individual with ASD among those reported to date.

Case Report

The patient was a 101-year-old woman whose chief complaints were difficulty of breathing and high fever. The status before admission was all assistance and the severity of heart failure was NYHA II. The history of the present illness included paroxysmal atrial flutter which was untreated, but she had not developed heart failure. She began to experience the aforementioned symptoms and was presented to our hospital at the first occurrence, and was admitted on the same day. She did not take any medication before admission. The medical history included surgery for intestinal obstruction. The family history and social history were non-contributory.

At admission, she was alert and physical findings were as follows: body temperature 100.9 degrees (Fahrenheit), blood pressure 123/86 mmHg, pulse rate 139 beats/minute (regular), and percutaneous arterial oxygen saturation 85%. Auscultation of the chest revealed moist rales and systolic murmur but did not clearly show the presence of fixed splitting of S2. The abdomen was flat and soft, and the legs exhibited moderate edema. X-ray examination of the chest showed a cardiothoracic ratio of 61%, moderate bilateral pulmonary congestion, pleural fluid, and enlarged pulmonary arteries. Electrocardiogram revealed atrial flutter with a heart rate of approximately 150 beats/minute. It also showed slight ST-segment depression (Figure 1).

At admission, the results of blood tests were white blood cell count 11620/ μ L, red blood cell count 3.42×10^6 / μ L, hemoglobin 8.8 g/dL, total protein 6.4 g/dL, AST 25 IU/L, ALT 12 IU/L, total bilirubin 0.7 mg/dL, creatinine 1.3 mg/dL, C-reactive protein 6.2 mg/dL, and N-terminal pro-brain natriuretic peptide 30566 pg/mL. The blood tests on admission are shown in the Table.

Echocardiographic examination revealed an ASD of the ostium secundum type (left to right shunt, Figure 2). The diameter of the ASD was approximately 10 mm. Left

From the ¹Department of Cardiology, Koto Hospital, Tokyo, Japan and ²Department of Cardiology, Juntendo University, Tokyo, Japan.

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Address for correspondence: Takahiro Matsumoto, MD, Department of Cardiology, Koto Hospital, 6-8-5, Ojima, Koto-ku, Tokyo, 136-0072, Japan.
E-mail: matsuabc2020@outlook.jp

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Figure 1. Chest radiogram upon admission showed a cardiothoracic ratio of 61%, moderate bilateral pulmonary congestion, pleural fluid, and enlarged pulmonary arteries. Electrocardiogram revealed atrial flutter with a heart rate of approximately 150 beats/minute. F indicates flutter waves.

Table. Blood Tests on Admission

Items	
WBC	11620 / μ L
RBC	3.42×10^6 / μ L
Hb	8.8 g/dL
Ht	30.5 %
PLT	11.9×10^4 / μ L
TP	6.4 g/dL
AST	25 IU/L
ALT	12 IU/L
T-BiL	0.7 mg/dL
T-Cho	187 mg/dL
BUN	37.4 mg/dL
CRE	1.3 mg/dL
UA	9.0 mg/dL
Na	143 mEq/L
K	4.8 mEq/L
Cl	108 mEq/L
CRP	6.2 mg/dL
NTproBNP	30566 pg/mL
BS	100 mg/dL
HbA1c	4.6 %

ventricular diastolic and systolic diameters were small at 28.2 mm and 23.0 mm, respectively (left ventricular ejection fraction: 40%). There was an intense echocardiographic signal from mitral valve regurgitation and from tricuspid valve regurgitation (right ventricular pressure: 71 mmHg). We were not able to visualize the main pulmonary artery. The blood flow signal viewed in Figure 2 was only the flow through the ASD.

The pulmonary-to-systemic blood flow ratios (Qp/Qs) was not calculated. We started an antibiotic and a diuretic immediately after admission, but died on the second day of hospitalization. Thus, she did not undergo other cardiac

Figure 2. Echocardiogram revealed an atrial septal defect (left to right shunt). RA indicates right atrium, RV: right ventricle, LA: left atrium, LV: left ventricle, and ASD: atrial septal defect.

examinations.

Discussion

ASD is the most common congenital heart disease among adults.¹⁾ However, it sometimes does not cause a heart murmur or any obvious electrocardiographic abnormality. Thus, it may not be detected until the individuals are elderly.²⁾ In our case, differential diagnosis included platypnea-orthodeoxia syndrome in which hypoxemia develops during postural change because of shunting through a patent foramen ovale.³⁾ However, this differential diagnosis could be ruled out based on her clinical courses.

Heart failure is said to develop in early childhood for individuals with Qp/Qs of at least 2.0 and in adolescence or adulthood for those with ratios of 1.5-2.0.⁴⁾ Generally, the tachycardia induces the smaller filling volumes and

the decrease of ejection fraction. However, we were not able to inspect the diastolic function of the left ventricle. Although the pneumonia was hiding behind the pleural effusion, we started an antibiotic. The causes of death were thought to be pneumonia and heart failure due to aggravated rapid atrial flutter.

The prognosis of ASD is death by age 40 years in half of the cases and by age 60 years in 90% of the cases.⁵⁾ There have been other ASD cases in their very advanced age. Reports of 96- and 94-year-old individuals were made outside of Japan in 1965⁶⁾ and 1984⁷⁾, respectively. A report of a 93-year-old individual was made in Japan in 1984.⁸⁾ Patients with ASD often goes unnoticed for decades because symptoms may be absent and because physical signs are subtle. A case of a 75-year-old female lived for over 70 years almost asymptomatic.⁹⁾ Asymptomatic duration of our case is considered to be much longer than this case.

The present report was made because she could be the oldest individual with ASD among those reported to date.

Conclusion

In conclusion, the patient was a 101-year-old woman with an ASD of the ostium secundum type and could be the oldest individual among those reported to date.

Disclosures

Conflicts of interest: The authors declare that they have no conflict of interest.

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