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Kasuistika | Case report

Cardiac myxoma presenting with fever of unknown origin

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SOUHRN

Klinické projevy myxomu mohou být různorodé a necharakteristické; výsledkem může být opožděné stanovení diagnózy a zahájení léčby a nakonec i nečekaně nepříznivá prognóza. Jedním vzácným projevem myxomu je horečka neznámého původu. Šestapadesátiletá žena s přetrvávající subfebrilií nedostatečně odpovídala na léčbu antibiotiky. Později u ní došlo k rozvoji hrudního diskomfortu a dušnosti při zátěži. Echokardiogram prokázal myxom v levé síni, který byl následně resekován. Pooperační komplikací byl rozvoj úplné AV blokády. Po dočasné kardiostimulaci došlo k obnově sinusového rytmu 12. den po operaci, kdy byla zahájena léčba i.v. izoprenalinem v nízkých dávkách. Následně začala pacientka užívat perorální medikaci. Horečka neznámého původu s nedostatečnou odpovědí na antibiotika by měla vzbudit podezření na přítomnost myxomu, a je tedy nutno co nejdříve provést echokardiografické vyšetření.

Key words:
Fever of unknown origin
Heart block
Myxoma

ABSTRACT

The clinical manifestations of cardiac myxoma can be miscellaneous and uncharacteristic, which may lead to delayed diagnosis and treatment, and ultimately an unexpected poor prognosis. Of these, fever of unknown origin is one of the rare manifestations of cardiac myxoma. A 56-year-old female presenting with sustained low-grade fever showed poor response to antibiotic treatment. Later, she developed chest discomfort and exertional dyspnea. She was inspected with echocardiography, which revealed a left atrial myxoma. She underwent cardiac myxoma resection. After the operation, she was complicated with complete heart block. She recovered to normal sinus rhythm on postoperative day 12 by temporary pacemaker and low-dose intravenous isoprenaline, followed by oral medications. Patients with fever of unknown origin with poor response to antibiotic treatments should raise the suspicions of cardiac myxoma and an echocardiographic examination is necessary.

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Introduction

Fever of unknown origin (FUO) is a clinical entity with considerable diagnostic challenges. The underlying causes of FUO can be categorized into infectious, neoplastic, noninfectious inflammatory and miscellaneous [1]. The classical diagnostic criteria of FUO that were defined by Petersdorf and Beeson [2] in 1961 were, (1) a temperature >38.3°C on several occasions, (2) at least a 3-week fever duration, and (3) lack of a clear diagnosis after a 1 week in-hospital investigation. In 1991, Durack and Street [3] expanded the concept of FUO with three novel supplements, i.e., nosocomial, neutropenic and human immunodeficiency virus-associated FUOs; and they modified the diagnostic criterion of "a 1-week investigation" into "a 3-day in-hospital investigation" or "≥3 outpatient visits".

Cardiac myxomas are the most common primary cardiac tumors [4]. It is well known that the clinical manifestations of cardiac myxomas are Godwin's triad, i.e., obstructive, constitutional or embolic symptoms [5]. However, the clinical manifestations of cardiac myxoma can be miscellaneous and uncharacteristic, which may lead to delayed diagnosis and treatment, and ultimately an unexpected poor prognosis. The unusual aspects of cardiac myxomas include rare clinical presentations, special patient populations, unusual locations and special pathology [6]. Diagnosis of cardiac myxomas can be challenging in the condition of these unusual aspects. Of these, cardiac myxoma patients may present with fever of unknown origin in extreme situations, and the diagnosis may take for several years [5]. This article reports a recent case of left atrial myxoma primarily presenting with fever of unknown origin, which led to a delayed diagnosis of cardiac myxoma for a few months.

Case report

A 56-year-old female was referred to this hospital due to 2-month sustained low-grade fever, chills, night sweats and malaise. Her temperature was highest at 38.6°C. In spite of antibacterial therapies in a local clinic, her fever did not subside. Besides, she complained of mildly dull pain on her upper abdomen, accompanied by dizziness. In her medical history, she had received twice of resections of the left thyroid tumors 14 and 8 years earlier, respectively. On admission, her temperature was 37.5 °C, pulse 111 beats/min, respiration 20/min, and blood pressure 94/60 mmHg. Blood examinations revealed a white blood cell count of 9.35 (normal range, 3.5–9.6)×10^9/L, hemoglobin 86 (normal range, 115–150) g/L, platelet 383 (normal range, 125–350) ×10^9/L, albumin 35.5 g/L, erythrocyte sedimentation rate 167 mm/h (normal range, 0–20 mm/h), C-reactive protein 120.94 mg/L (normal range, 0–8 mg/L), and IgG 23.3 g/L (normal range, 7.24–16.85 g/L). Gastroscopy revealed superficial atrophic gastritis. She was administered with intravenous levofloxacin 0.4 once daily and supportive treatments. On hospitalization day 4, her temperature was subsided and all symptoms were relieved. She was discharged on hospitalization day 10.

The next day following discharge, she became febrile again. She went to a local clinic, receiving intravenous antibiotics for consecutive 7 days. Her temperature was subsided, and she was doing well without relapse since then.

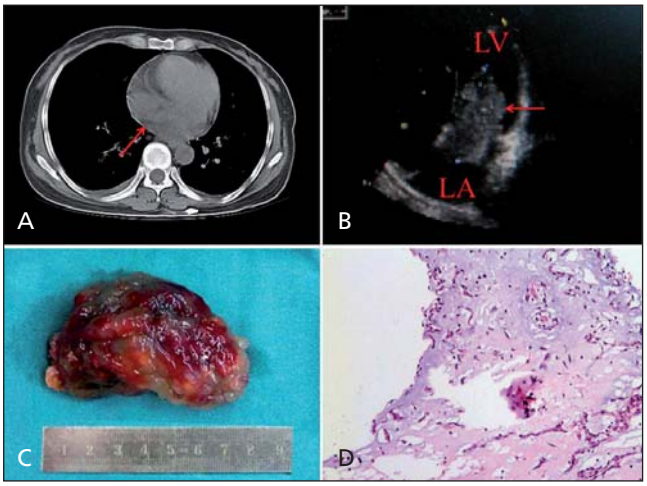

Fig. 1 – (A) Chest computed tomography showed a hypoattenuate mass (arrow) attaching the inferior portion of the atrial septum in addition to bilateral lung infiltrates; (B) transthoracic echocardiography showed a hypodense mass (arrow) protruding into the left ventricle during diastole; (C) the resected myxoma was grossly gelatinous with extensive hemorrhages; and (D) microscopically, the myxoma was predominantly composed of scattered satellite, spindle-shaped, or polygonal myxoma cells in the loose stroma. HE 100×. LA – left atrium; LV – left ventricle.

Two months later, she had chest discomfort and exertional dyspnea. She came to us 5 days later due to symptomatic exaggeration. A chest computed tomography revealed bilateral lung infiltrates and an irregular hypoattenuate mass attaching to the inferior portion of the interatrial septum (Fig. 1A). An echocardiography revealed a huge left atrial myxoma 6.1 cm × 3.8 cm in size (Fig. 1B). She received a left atrial myxoma resection under cardiopulmonary bypass.

During the operation, the myxoma was found to be located inferior to the fossa ovalis. The myxoma was sessile, with a narrow base. It was soft, gelatinous, and brownish in color, measuring 7.6 cm × 3.7 cm × 2.5 cm. There were extensive hemorrhages on its surface (Fig. 1C). It was resected *en bloc* with sufficient normal atrial septal tissue at its base via a right atrium-interatrial septal approach. The defect of the interatrial septum was primarily closed. Histological study of the specimens revealed a myxoma (Fig. 1D). Cultures of the myxoma tissue turned to be negative.

She developed heart block immediately after the operation. With the aid of temporary pacemaker and intravenously low-dose isoprenaline, which was replaced by oral *Scopoloa acutangula* extract tablets 135 μg and salbutamol 4.8 mg three times daily since postoperative day 7, she recovered to normal sinus rhythm on postoperative day 12, and was discharged home on postoperative day 14. She was doing well at 4-month follow-up postoperatively.

Discussion

Cardiac myxoma is a rare cause of FUO. The clinical manifestations of cardiac myxoma are usually nonspecific, depending on the natural behavior of the tumor and its

location within the heart [7]. The diagnosis in such patient often takes longer time than usual when the patient presents only with constitutional instead of circulatory or neurological symptoms. In particular, 26.9% patients of this cohort presenting with only constitutional symptoms make the diagnosis quite difficult. Hence, the rapidity of the diagnosis in the patients with a cardiac myxoma presenting as FUO determines the patients' outcomes [8]. In order to disclose the mysterious nature of this condition, it is important to always recall it, to employ an echocardiographic screening and lead to the curative treatment of surgical resection [9].

In patients with cardiac myxoma presenting with FUO, 26.9% of the patients only manifested constitutional symptoms and 14.8% were also infected cardiac myxomas [10]. The rarity of FUO in cardiac myxoma patients often causes a delayed diagnosis. Therefore, non-invasive diagnostic means including echocardiography, chest computed tomography and magnetic resonance imaging are necessary in patients with prolonged fever [11]. Bhanot et al. [12] proposed comprehensive outpatient counseling for the etiological diagnosis of FUO. Abnormal laboratory findings, such as leukocytosis, thrombocytosis, or thrombocytopenia, anemia and elevated erythrocyte sedimentation rate and C-reactive protein, may be helpful in determining the cardiac myxoma source of FUO. Elevations of inflammatory mediators including serum interleukin-4, -6, and -12, p70 ribosomal protein, interferon-γ, and tumor necrosis factor-α that may be responsible for the febrile manifestation of cardiac myxoma patients can be alternative diagnostic indicators [11]. There have been reports of infected cardiac myxoma presenting with FUO, and therefore, up to 8-week antimicrobial therapy for such patients after surgical resection of the myxoma [12] was suggested. Heart block was complicated in 2.6% cardiac myxoma resections, and the patient may require permanent pacemaker implant [13].

Scopoloa acutangula extract tablet (trade name: *Kelangning*) contains a series of alkaloids, anisodinum, scopolamine, anisodamine and hyoscyamine as its main ingredients. It may improve the membrane permeability, enhance the activities of (Ca^{2+}-Mg^{2+})-ATPase in the membrane of myocardium, increase myocardial blood flow and dilate the coronary arteries. It is therefore indicated for the treatment of coronary artery disease and arrhythmias, such as sick sinus syndrome and ventricular premature contractions [14, 15] in addition to its antispastic effects.

In the present patient, the resected myxoma was sterile by microbiology investigations and she received 2-week postoperative antibiotic treatment. Her postoperative heart block was cured by treating with combined temporary pacemaker and medications.

Conclusions

Fever of unknown origin is a rare manifestation of the patients with cardiac myxoma. In such a situation, the diagnosis can be challenging and the proper treatment can be delayed. Patients with FUO with poor response to antibiotic treatments should raise the suspicions of cardiac myxoma and echocardiographic examination is necessary for a definite diagnosis.

Conflict of interest

No conflict of interests.

Funding body
None.

Ethical statement
I declare that the research was conducted according to Declaration of Helsinki.

Informed consent
I declare that informed consent was obtained from all patients participating in this study.

References

[1] D.C. Knockaert, S. Vanderschueren, D. Blockmans, Fever of unknown origin in adults: 40 years on, Journal of Internal Medicine 253 (2003) 263–275.
[2] R.G. Petersdorf, P.B. Beeson, Fever of unexplained origin: report on 100 cases, Medicine 40 (1961) 1–30.
[3] D.T. Durack, A.C. Street, Fever of unknown origin – reexamined and redefined, Current Clinical Topics in Infectious Diseases 11 (1991) 35–51.
[4] J. Amano, T. Kono, Y. Wada, et al., Cardiac myxoma: its origin and tumor characteristics, Annals of Thoracic and Cardiovascular Surgery 9 (2003) 215–221.
[5] G. Gavrielatos, K.P. Letsas, L.K. Pappas, et al., Large left atrial myxoma presented as fever of unknown origin: a challenging diagnosis and a review of the literature, Cardiovascular Pathology 16 (2007) 365–367.
[6] S.M. Yuan, Unusual aspects of cardiac myxoma, Revista Brasileira de Cirurgia Cardiovascular (2015) (in press).
[7] A. Wyne, A look at cardiac myxoma, UWOMJ 77 (2008) 63–66.
[8] S.M. Yuan, Prognostic prediction of troponins in cardiac myxoma: case study with literature review, Revista Brasileira de Cirurgia Cardiovascular 30 (2015) 276–282.
[9] Y.N. Bakri, J. Subhi, M. Fawzi, Right atrial myxoma presenting as post partum ascites and fever of unknown origin, Acta Obstetricia et Gynecologica Scandinavica 71 (1992) 74–75.
[10] S.M. Yuan, Infected cardiac myxoma, Revista Brasileira de Cirurgia Cardiovascular 30 (2015) 571–578.
[11] J.N. Lin, C.H. Lai, L.F. Lu, H.H. Lin, Fever of unknown origin from a left atrial myxoma: an immunologic basis and cytokine association, Southern Medical Journal 104 (2011) 360–362.
[12] N. Bhanot, A.G. Sahud, S. Bhat, et al., Fever of unknown origin: a case of cardiac myxoma infected with *Staphylococcus lugdunensis*, Southern Medical Journal 103 (2010) 697–700.
[13] R. Scrofani, C. Carro, L. Villa, et al., Cardiac myxoma: surgical results and 15-year clinical follow-up, Italian Heart Journal. Supplement 3 (2002) 753–758.
[14] J. Cheng, Experience for treating sick sinus syndrome with Longlifu capsule, Clinical Journal of Chinese Medicine 3 (2011) 84–85.
[15] S.L. Wang, Berberine plus Kelangning for the treatment of ventricular premature contractions in 46 patients, Fujian Medical Journal 19 (1) (1997) 80–81.