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Case Report

The Revelation of Atypical Chest Tightness: a Case Report from a Patient at a Community Outpatient Clinic.

Tianzi Li [1,4], Yue Jiang [2], Fuying Zhao[3], Xiuhua Ma [4*], Lin Ma[5].

1. School of General Practice and Continuing Education, Capital Medical University, 100124, Beijing, China
2. First Affiliated Hospital of Tsinghua University, 100016, Beijing, China
3. Gaobeidian Community Health Service Center, Chaoyang District, Beijing,100069, Beijing, China
4. Capital Medical University Daxing Teaching Hospital, 102600, Beijing, China
5. Beijing Children's Hospital of Capital Medical University, 100045, Beijing, China

Abstract

Background: Chest tightness is a common symptom, mostly accompanied by chest pain symptoms, and often caused by coronary heart disease and other cardiogenic diseases. Communities are the preferred institution for people to see doctors and often act as gatekeepers. As the first doctor, the general practitioner should have the comprehensive ability of general practice.
Case presentation: We present a case of atypical chest tightness in a 50-year-old man. After adopting a patient-centered diagnosis and treatment approach, the relevant examinations were conducted and the underlying cause of the symptoms was eventually pinpointed. Chest tightness does not always originate from cardiac diseases. Digestive tract disorders are also among the potential causes. The clinical thinking of general practice plays a vital role.
Conclusions: This paper meticulously clarified the consultation process and subsequent follow-up of an unusual case of chest tightness within the community, highlighting the community's focal points, the suitable treatment approach, and the distinctive comprehensive management and follow-up strategies. In general practice, the diagnosis and treatment mode, the ability to identify diseases and the advantages of continuous follow-up and two-way referral are prominent.

Keywords : *Community, Consultation, Chest Tightness, General practice, General practitioner.*

BACKGROUND

Chest tightness is a common symptom in clinical practice, mainly caused by coronary heart disease (CHD) and other cardiac diseases.[1] Acute chest tightness symptoms are often accompanied by severe chest pain symptoms, mainly caused by acute myocardial infarction, aortic dissection and other diseases, while chronic chest tightness symptoms are often caused by stable angina pectoris or other systemic diseases.[2]

The community serves as the preferred institution for inhabitant patients, offering patient-centered care and readily accessible diagnosis and treatment services.[3] Being at the grassroots level does not equate to outdated or inferior diagnosis and treatment methods. Under the concept of general practice or family medicine, general practitioners are patient-centered, have a comprehensive understanding of patients' diseases and social background, and are able to clarify the diagnosis of diseases and provide high-quality comprehensive services.[4]

CASE PRESENTATION

The patient, a 50-year-old male, presented to a community health service center for the first time on June 5, 2024, with the chief complaint "intermittent chest tightness for more than 2 months and aggravated for 1 week".

Medical history was collected in an independent clinic, and the general practitioner combined open consultation and closed consultation.[5] First, greet the patient warmly, for example, by asking, "What can I do to help you today?" or "What seems to be troubling you?" and so forth. The patient

***Corresponding Author:** **Xiuhua Ma**, Capital Medical University Daxing Teaching Hospital, 102600, Beijing, China. **Email:** clinicalmedicine22@qq.com
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often complains of chest tightness in daily life, which typically manifests as chest discomfort, with a sensation of pressure or tightening in the heart area, though their description may not always be precise.

During the initial community diagnosis, verifying the presence of chest pain symptoms and delving into the specifics of these symptoms is imperative. This includes examining the cause, nature, precise location, and duration of chest tightness, with angina pectoris being ruled out initially. Subsequently, further investigation into aggravating or relieving factors, like physical activity, body position, eating habits, and mood, is necessary. Inquiry should also extend to accompanying symptoms such as fever, chills, cough, hemoptysis, cyanosis, palpitations, acid reflux, dyspnea, dysphagia, etc.[6]

The patient experienced chest tightness, without radiating chest pain for more than 2 months, especially when climbing stairs. There was no pressure, fever, hand shaking, panic, asthma, dizziness, headache, or blurred vision. Acid reflux and heartburn were not obvious, nor were nausea, vomiting, abdominal pain, or diarrhea. Chest tightness was intermittent and not position-specific, occurring mostly after dinner and before bedtime, without proper diagnosis and treatment. After eating greasy food at noon 1 week ago, chest tightness was aggravated, accompanied by breath holding, nausea, abdominal distension, dull pain in the upper abdomen, fatigue, no pain in the front area, no wheezing, no cough, no vomiting, diarrhea, no dyspnea, spontaneous relief at night, and no recurrence of nausea, abdominal pain, or other discomfort. He came to the community health center for further diagnosis and treatment. Since the onset of the disease, he was in good spirit, poor diet, poor sleep, with no significant change in body weight.

According to the main clinical manifestations, the urgency and severity of the patient's condition should be assessed immediately to clarify the next treatment measures.

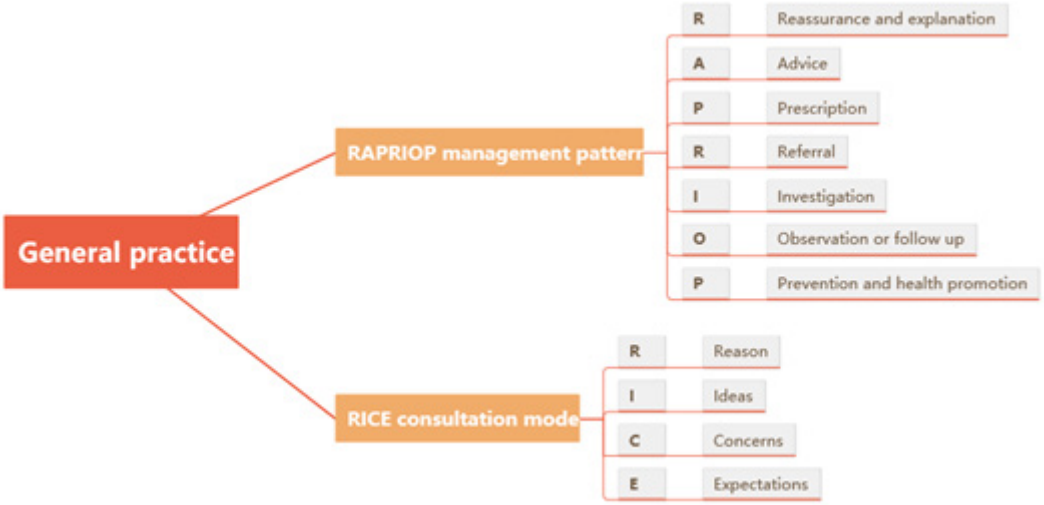
The patient did not have sudden chest discomfort, with "red flag symptoms" such as unconscious disorder, fever, hypothermia, pale face, cyanosis, and shortness of breath [7], considering alarm diseases such as acute coronary syndrome, aortic dissection, pulmonary embolism, cardiac tamponade, and tension pneumothorax, among others. His vital signs were stable: body temperature 36.0°C, pulse 86 times/min, breathing 18 times/min, left blood pressure 121/70mmHg, right blood pressure 130/74mmHg, blood oxygen saturation 97%. Monitor the vital signs in the community, learn from the "RAPRIOP" mode of patient management. By "reassure", we communicated with the patient, gave appropriate counseling, and expressed the remote possibility of life-threatening acute heart disease.

The patient continued to inquire about his previous condition and other medical history. Past history includes hypertension for over 10 years, with a maximum reading of 170/100mmHg. He regularly took amlodipine 5mg qd and blood pressure was controlled between 120-130/70-85mmHg. He denied the history of coronary heart diseases and diabetes, the history of cerebrovascular diseases, and the history of mental diseases. The previous physical examination found mild fatty liver and gallstone for more than 5 years, without any treatment. He denied the history of infectious diseases such as hepatitis and tuberculosis, the history of food and drug allergy, and denied the history of surgery and trauma. Personal history: married with a healthy spouse, and gave birth to a healthy daughter. He was a construction worker with a smoking history of more than 20 years, a alcohol history of more than 20 years, and didn't quit smoking or drinking. The patient had been consuming a diet lacking in regularity and with an oil intake of 25-30g per day. In an effort to improve health, the patient has been gradually reducing his intake of oil and salt, with the specific degree of reduction varying. He used to walk and play golf. Family history: deceased parents, both had suffered from high blood pressure, diagnosed at the age of about 50 years old. The father died of cerebral hemorrhage.

In the medical history inquiry, the RICE model should be considered for consultation. Specifically include: R (Reason): intermittent chest tightness and discomfort; I (Ideas): what caused the situation; C (Concerns): being worried about serious problems in the heart; E (Expectations): hoped to get a clear diagnosis and treatment. We focused on getting a full picture of the patient's history at the beginning of the consultation and clinical treatment. [8]

The **figure 1** covered the RAPRIOP management pattern and the RICE consultation mode in the realm of general practice.

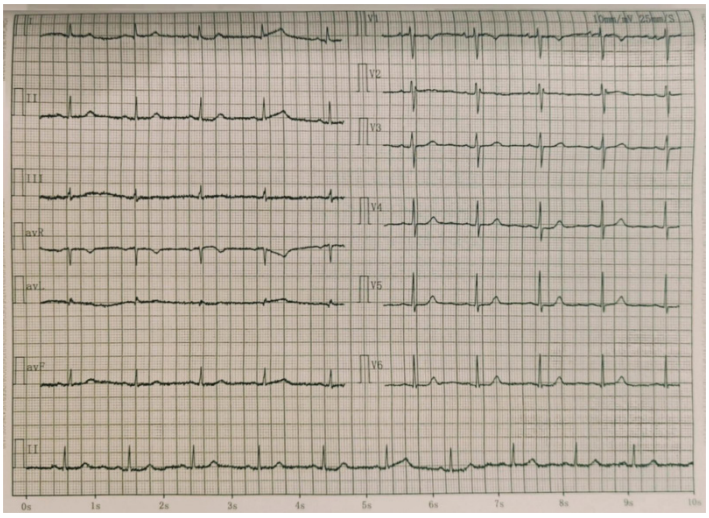
Figure 1. Characteristic patterns of general practice



During the outpatient physical examination, the patient's measurements were noted: height 175cm, weight 74kg, waist circumference 88cm, with a BMI of 24.16kg/m^2, which was considered within the normal range for adult males. Spirit and surface skin had no abnormalities. No abnormal breathing sounds or heart murmurs. Heart rate was 84 times/minutes, and rhythm was regular. Abdominal and neurological tests showed no abnormalities. No edema in the lower extremities.

Then completed the relevant inspections in the community. Twelve-lead ECG: sinus rhythm, roughly normal ECG, shown in **figure 2**. No obvious abnormalities were observed in blood routine and myocardial enzymes. Chest X-ray: no special abnormality was observed. Preliminary diagnosis: chest tightness to be checked, hypertension grade 2 with high-risk criteria, gallstone, fatty liver.

Figure 2. ECG report.



Which diseases did we need to consider? The accurate diagnosis of patient with atypical chest tightness necessitates the confirmation of potential lesions in the heart, lungs, pleural cavity, and digestive system. [9] Specifically speaking,

1. Circulatory system diseases, including angina pectoris, arrhythmia, cardiomyopathy, heart valve disorders, cardiac neurosis, and pericarditis.
2. Respiratory diseases encompass chronic obstructive pulmonary disease (COPD), pulmonary interstitial fibrosis, as well as chest wall, pleural, and mediastinal disorders.
3. Digestive system disorders may involve the esophagus, gastrointestinal tract, hepatobiliary system, and pancreas and spleen diseases, such as gastroesophageal reflux disease, chronic gastritis, gastric ulcer, liver abscess, chronic cholecystitis, irritable bowel syndrome, etc.
4. Endocrine and metabolic diseases, such as hyperthyroidism, gouty arthritis, diabetes, etc.
5. Other diseases, such as malignant tumor, severe anemia, myasthenia gravis, epilepsy, and toxic diseases, etc. The main aspects were shown in **Figure 3**.

Figure 3. Common diseases of chest tightness symptom.



Next we offered treatment plans. Currently, there was no emergency situation, and the electrocardiogram results are normal. But heart disease could not be completely ruled out, and further relevant examinations were still needed. Symptoms were slightly relieved after oxygen therapy administered. No other special treatment was required at that time. Patient was advised to closely monitor his condition and seek medical attention immediately if symptoms worsen or new discomfort arises.

In terms of diet, the patient was instructed to eat a light diet, without drug treatment. Auxiliary examinations should be added to identify or exclude his diseases, including abdominal ultrasound, Helicobacter pylori testing and gastroenteroscopy.

The next examination results: the thyroid gland was not enlarged. Routine urine stool showed no significant abnormalities and was negative for occult blood. Blood biochemistry: total cholesterol 5.62 mmol/L (reference range 2.8-5.2mmol/L), triglycerides 1.73mmol/L (reference range 0.6-2.8 mmol/L), low density lipoprotein 3.70 mmol/L (reference range 1.6-3.4 mmol/L), uric acid 452μmol/L (reference range 100-420μmol/L), fasting blood glucose, transaminases, creatinine, electrolytes were within the normal range. No significant abnormalities in coagulation and thyroid function.

We enhanced communication and understanding with the patient in outpatient clinic. He had an irregular life and diet with excessively salty, consuming approximately 10g of sodium per day and lacking fresh vegetables and fruits. For nearly a week, he experienced pain in the upper abdomen after dinner. After eating, he lay down and felt heartburn and tingling in my chest, which relieved when sat up. At night, he had difficulty in falling asleep. Luckily, regular exercise was done, about an average of 20 minutes per day. Economic conditions was well. He was extroverted and enthusiastic. The family was more harmonious when living with the newly married daughter. However, recently, due to family housing problems, he had been experiencing tension and anxiety, which affected his sleep.

According to the cardiovascular guidelines, the patient with ASCVD was assessed as high-risk [10]. On the basis of joint decision-making, the drug prescription was: antihypertensive drugs unchanged, atorvastatin calcium tablets, without the application of sleeping pills to help sleep. In view of the incomplete clarity of the cause of the patient and no obvious abnormalities in the routine examination at present, it was suggested that the patient went to the tertiary hospital to further complete some necessary inspection items. He improved the comprehensive ultrasound, dynamic electrocardiogram and gastroenteroscopy in the tertiary hospital.

We paid close attention to patient's symptoms. And emphasized lifestyle adjustment aspects: stopping smoking and alcohol, regular diet and rest, diets with low salt and fat, drinking more water, doing more exercise and maintaining emotional stability. To regularly review the test of blood routine, liver and kidney function and other indicators. The community maintained continuous follow-up. The patient was advised to visit a psychiatric department and to undergo pharmacological intervention if necessary.

Further follow-up

The general practice model advocated whole-process and continuous management, and paid attention to later follow-up. The patient had been treated in a tertiary hospital to

complete several examinations. He was further examined in the department of cardiology, gastroenterology and other outpatient departments. Feedback of multiple examination results were shown 2 weeks later. Gastroenteroscopy results were fed back 3 weeks later. Echocardiography: ejection fraction 60%, minimal mitral regurgitation. Chest CT: aorta and coronary artery stiffness. Abdominal ultrasound: fatty liver, gallbladder stone, the size of 0.8*0.5cm, right kidney cyst, intestinal flatulence. Thyroid ultrasound: multiple nodules in the right lobe of the thyroid gland were grade TI-RADS 3. Neck vascular ultrasound examination showed carotid stiffness. Lower limb vascular showed showed venous flow and arterial plaque formation. Ambulatory blood pressure and dynamic electrocardiogram have been performed, and the results showed reasonable blood pressure control, sinus rhythm, and some atrial premature beats. The plate test was negative, and the current antihypertensive medication was continued. Gastroscopy and colonoscopy had been performed, and the results showed reflux esophagitis, chronic non-atrophic gastritis and negative Helicobacter pylori.

Revised diagnosis: reflux esophagitis, chronic non-atrophic gastritis, hypertension grade 2 high-risk, atherosclerosis, hyperlipidemia, hyperuricemia, gallstone, fatty liver, right kidney cyst, multiple thyroid nodules, anxiety state, insomnia. Drug treatment: regular oral amlodipine besylate tablets 5 mg qd, atorvastatin 20 mg qn, esomeprazole enteric-coated tablets 20 mg qd.

Two-way referrals in the community are the focus of the work. So when is it most appropriate to bring patient back to the community? When the diagnosis is clear, the treatment plan is determined, and the clinical situation has been stable, the patient is recommended to further follow up in the community.

What content should the community follow-up? To assess cardiovascular and cerebrovascular risk factors: family history, obesity, atherosclerosis, history of tobacco and alcohol, hypertension, hyperglycemia, hyperlipidaemia, high homocysteine, etc. The community should regularly follow up the patient every month, strengthen the communication with the patient, and enhance the trust to the community and the degree of cooperation with the medical treatment. Pay attention to the adverse drug reactions, such as abdominal pain, constipation, diarrhea, oral bleeding, myolysis and other symptoms. Monitor the patient's blood sugar, blood lipid, electrocardiogram, thyroid function etc. in primary community institutions. Provide rich education contents in the aspect of non-drug treatment. Including to correctly monitor blood pressure at home, maintain reasonable diet, and increase confidence in medication compliance. Pay attention to the lifestyle and labor intensity during the work. To communicate with the patient's family members, increase the patient understanding of the disease, and advise them to maintain a reasonable lifestyle. Patient was advised to come to the community for regular health follow-up.[11]

Eventually, the patient's digestive system disease diagnosis was clear. Symptoms such as chest tightness, acid reflux, and dull abdominal pain were relieved. No obvious abnormalities in blood routine and liver and kidney function. The patient completed the examination after the community follow-up.

After identifying the patient's diagnosis, we adjusted the patient's drug treatment, and added aspirin enteric-coated tablets 100mg qd for oral administration. According to the opinions of physicians in the tertiary hospital, the patient's gallstone was not specially treated, and there was no surgical indication, so the patient was asked to review regularly.

In the follow-up procedure, the blood lipid did not reach the standard, the blood uric acid was normal, and the symptoms of acid reflux and heartburn were not obvious. After the family housing problem was solved, the patient's sleep state was significantly improved, with no obvious anxiety or depression. Family support for spouses and daughter enhanced his beliefs, and he interacted well with colleagues to maintain good dietary habits together. The patient would like to pay attention to personal health problems, regular physical examination, and follow the doctors advice to complete the improvement of lifestyle and drug treatment. The community told the patient to follow up in general practice, cardiology, gastroenterology, endocrine or thyroid surgery.

Comprehensive management

Standardized general practice intervention was reflected in many aspects. To lose weight, adjust lifestyle, correct bad habits, quit smoking and drink, pay attention to food hygiene, reasonable diet, balanced nutrition, eat more fresh fruits, fruits and vegetables, regular work and rest and exercise, exercise 4-7 days a week, increase aerobic exercise such as jogging and swimming, etc.To increase the amount of water, more than 2000ml per day, take regular eating and exercise, avoid overwork, avoid eating too much or too fast or too full, do not immediately after eating, and maintain weight stability. It is recommended that blood pressure be controlled below 130/80 mmHg, blood lipid profile below 1.8 mmol/L and uric acid at 420 μmol/L. C13 breath test, electrocardiogram, cardiac color ultrasound, abdominal ultrasound, thyroid ultrasound and other tests are the focus of follow-up examination. [12] Monitor blood pressure and heart rate at home. If feel unwell, seek medical attention immediately.

Regular community follow-up is necessary. General practitioners strengthen communication and guidance with patient, from the source to eliminate excessive doubts, pay attention to family and social relationship. Improve contracted services for family physicians, and incorporate diseases into chronic disease management. When monthly return visit occurs, physicians fully explain the necessity and precautions

of medication, and increase the patient's medication compliance. Pay attention to whether there are any adverse drug reactions or new complications, and adjust the drug treatment in time. Pay attention to the psychological situation of the patient, to relief when needed. Pay attention to the social relationship of the patient, and carry out the education and management of his family members. It is beneficial to provide patient with whole-process and continuous follow-up. Timely referral is indispensable when bad effects or complications happens.

DISCUSSION

Disease diagnosis and management

In this case, the symptom is common and relatively simple, but it is easily inclined to ignore the real etiology. Chest tightness is not uncommon, but not all causes are heart abnormalities. Reflux esophagitis can also cause patients with chest tightness, heartburn and other uncomfortable symptoms.

If only heart disease is considered, and no abnormalities are found after perfecting electrocardiogram and cardiac color ultrasound, will we offer no intervention and delay the treatment of the patient? Without continuous attention and follow-up, how can the real cause be identified and advantages of general practice be manifested?

The advantages of general practice

General practitioners have the ability to identify critical diseases and give reasonable treatment measures in the limited time of the outpatient service. General practice is patient-centered and takes full account of patients' bio-social-psychological factors. Issues that cannot be referred by physicians in third-class hospitals can also be fully covered in community institutions, including the patient's occupation, social background, family relationship, recent psychological status, etc.

Improving the lifestyle is a top priority for patients. In the long run, it also plays a basic role in the prevention of acute and serious diseases such as cardiovascular and cerebrovascular diseases. Health education by general practitioners greatly promotes the management and rehabilitation of patients.

Be truly patient-centered, not just focus on the disease itself. General practice can realize the whole process and continuity, and the joint management of the coexistence of multiple diseases cannot be replaced by specialized department. General practitioners fully think of the patients, consider the patients' family, social background and psychological status, and implement a comprehensive management mode.

Community referral can avoid disease delay. Refer patients to superior hospitals when they have progressive dysphagia, significant weight loss, unclear diagnosis, complications, poor medication and surgery needed. On the other hand, When the patient's diagnosis is concretely clear and the condition is stable, the referral from the hospital to the community can provide efficient follow-up and whole-process management for the patients.

CONCLUSIONS

This paper elaborated the reception process and follow-up content of an atypical chest tightness patient in the community, emphasizing the focus of the community consultation, the appropriate treatment method and the characteristic comprehensive management and follow-up. Chest tightness is not only the cause of the heart. General practitioners should have a comprehensive understanding of the patient's condition and provide appropriate treatment or treatment measures.

In general practice, the diagnosis and treatment mode, the ability to identify diseases and the advantages of two-way referral are prominent. General practitioners should also make continuous progress to improve their comprehensive quality and the level of diagnosis and treatment.

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Author Contributions

LTZ, JY and ZFY contributed to the treatment design and patient management. LTZ participated in the whole diagnosis and treatment, conceived the presented idea and wrote the paper. MXH and ML provided research ideas, and reviewed and revised the paper. All authors gave consent for publication. All authors read and approved the final manuscript.

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Availability Of Data And Materials

Not applicable.

Declarations

Ethics Approval and consent to participate

This research was approved from Gaobeidian Community Health Service Center, Chaoyang District, Beijing and the patient.

Consent for publication

Written informed consent was obtained from the patient to publish this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

There is no competing interest in this article.

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