Intermittent Complete Atrioventricular Block with Syncope:
A Case Report

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Syncope is a common emergency condition, which accounts for 3% of emergency room visits. The etiology of syncope is complicated and most of the presentation is paroxysmal. Thus, it is extremely challenging for the physicians to establish the cause of syncope. A 71-year-old man with recurrent of attack syncope is reported here. In his initial presentation, all basic studies including 24 hours ambulatory electrocardiogram (ECG) monitoring, echocardiography, brain computed tomographic (CT), electroencephalogram (EEG), transcranial duplex imaging and tilt table test, were negative except ECG found bifascicular block. At a subsequent syncopal attack, 24 hours ambulatory ECG was repeated and found intermittent complete atrioventricular block with prolonged ventricular asystole up to 19.4 sec. The patient recalled black out of bilateral vision and chest tightness when he was sitting and watching TV at this period. He received a VDD pacemaker implantation and became symptom free during the follow up period.

Key words: bifascicular block, complete AV block, syncope, 24 hours ambulatory ECG

Introduction

Syncope is a common problem. In the Framingham study, the 10-year-cumulative incidence of syncope was 6% (¹). Further, prior studies have estimated that syncope accounts for 3% of emergency room visits and 1% of hospital admission (²). The potential causes of syncope are extremely numerous, and establishing the cause of syncope is extremely challenging problem for most physicians.

Bifascicular block represents a particular form of intraventricular conduction disease, which is associated with a high incidence of progression. In some patients, this form of conduction disease progresses to high degree atrioventricular (AV) block and accompany by syncope. In clinical evaluation of patients with syncope, the physician should review the clinical history with caution. For an elderly with bifascicular block, repeated 24 hour ambulatory ECG should be considered, since the high degree AV block may be episodic.

Case Report

A 71-year-old man was admitted to the hospital because of complete atrioventricular block and syncope.

The patient had been relatively well until twelve years ago, when bifascicular block (Fig. 1) was found incidentally at annual physical examination. Ten years ago, he had a history of chest discomfort, and received cardiac catheterization, which revealed myocardial bridge. He was then followed up...
regularly in the outpatient department.

Until four years earlier, he visited the emergency department, because of sudden loss of consciousness while jogging. There were no witnesses. He regained consciousness spontaneously and there was no postepisodic fatigue or weakness. He was brought to the emergency department, but was discharged without a definite cause of the syncope, and all relevant tests were negative except ECG showed bifascicular block.

He visited outpatient department on the next day, when transcranial duplex imaging, electroencephalography, tilt table test and echocardiography were all revealed negative findings. 24 hours ambulatory electrocardiography (ECG) was performed, which revealed no significant tachyarrhythmia or prolonged pause.

The patient had two more syncopal episodes over the following years. One week prior to the admission, he experienced sudden onset of dizziness, and shortness of breath followed by fainting spell. He visited the emergency department again.

On arrival in the emergency department, the patient was in clear consciousness. The temperature was 36.9°C, the blood pressure 126/53 mm Hg, the pulse 65 beats per minute, and the respiratory rate 16 breaths per minute. Oxygen saturation was 96% under room air.

On physical examination, the patient appeared well. There was no carotid bruits, or no heart murmur. The lungs were clear. The abdomen and extremities were normal. The complete blood count and levels of electrolytes and glucose, as well as the results of tests of coagulation, cardiac enzyme, renal function, and liver function, were all within normal ranges.

The electrocardiogram showed normal sinus rhythm with bifascicular block. On chest radiography, the lungs were clear, and the heart size was normal.

He was referred to the outpatient department of cardiology, where 24 hours ambulatory ECG was repeated. This time, the study detected 12 episodes of prolonged pause with a longest pause up to 19.4 sec. The ECG during pauses showed complete atrioventricular block (Fig. 2). Furthermore, of black out of bilateral vision while sitting and

![Fig. 1 Complete ECG showed right bundle branch block and left anterior fascicular block.](image-url)
Fig. 2a  Prolonged pause up to 19.4 sec was recorded at around 16:36 by 24 hour ambulatory ECG. The patient recalled black-out of bilateral vision when he was sitting and watching TV at this period.

Fig. 2b  The continuous ECG tracings during pause showed complete AV block with prolonged ventricular asystole.
watching TV was recalled by the patient at the timing of the longest pause recorded by 24 hours ambulatory ECG.

Under the diagnosis of intermittent complete atrioventricular block with syncope, he was admitted to the hospital for management. A VDD pacemaker was implanted for the patient. During follow up period, he remained symptom-free and a repeated 24 hours ambulatory ECG showed intermittent ventricular pacing rhythms.

**Discussion**

Syncope is defined as a sudden and transient loss of consciousness associated with a loss of postural tone, in which recovery is spontaneous\(^3\). It may develop suddenly, or may be preceded by symptoms of faintness. In the general population, the most common cause of syncope is neurocardiogenic, followed by arrhythmia\(^4\). The causes of syncope are highly age dependent and in the elderly patient, as the present case, have a higher possibility of decreased cardiac output, such as aortic stenosis and pulmonary embolus, and arrhythmias.

The presentation of a patient who had a sudden loss of consciousness is a problem both familiar and challenging to the physician. A careful history taking and physical examination are the most important diagnostic tools for the differential diagnosis of syncope. Fainting in the upright position without warning symptoms or associated with palpitation is indicative of cardiac syncope. The choice of diagnostic tests should be guided by the history and the physical examination. ECG, 24 hours ambulatory ECG, and echocardiography should be carried out if cardiogenic syncope was considered\(^5\).

ECG gives important information about the rhythm and atrioventricular conduction. Sinus bradycardia, a prolonged PR interval, or bundle-branch block raises the possibility of symptomatic sick sinus syndrome or intermittent complete AV block.

24 hours ambulatory ECG is ideal for episodes that occur at least every day. It allows the correlation of symptoms with the cardiac rhythm in the patients. However, arrhythmic syncope cannot be excluded in the patient with negative finding in 24 hours ambulatory ECG, because arrhythmic syncope may be episodic. Repeated study must be carried out, if arrhythmic syncope is strongly suspected clinically.

Heart block developed most commonly in patients with conduction tissue fibrosis, followed by coronary or other heart disease\(^6\). Bifascicular block is one of the less serious forms of conduction disease and has a prevalence of 1-1.5\% in the adult population\(^7\). A mortality rate of 2-14\% per-year has been reported in an unselected bifascicular block population and the independent predictor of all-cause mortality and sudden cardiac death was the presence of congestive heart failure\(^7\).

The management of bifascicular block is determined by the severity of symptoms and the degree of associated AV block. The American College of Cardiology and American Heart Association guidelines recommended that the implantation of pacemakers is indicated in asymptomatic chronic bifascicular block with intermittent third-degree AV block, and type II second-degree AV block. Pacing is also indicated in bifascicular block with a markedly prolonged HV interval (greater than or equal to 100 milliseconds) or syncope not proved to be due to AV block and other likely causes have been excluded, specifically ventricular tachycardia. Pacing was not recommended in fascicular block without AV block and symptoms\(^8\).

In summary, patients with bifascicular block and syncope require more clinical attention. These patients had higher incidence of progression into
complete heart block or ventricular arrhythmia, especially in those with poor left ventricular function. In cases which bifascicular block is symptomatic or associated with high degree AV block, pacemaker therapy is highly effective for the relief of symptoms.

References

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間歇性房室傳導完全阻斷伴隨暈厥：病例報告

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暈厥是一種常見的急症，約佔急診原因的3%。其病因甚為複雜，而且絕大多數屬陣發性，因此確診診斷的病因對醫師而言是大挑戰。本文報告一位反覆暈厥發作的71歲男性病人。除了心電圖顯示二支束傳導阻斷外，其他基本的檢查(包括廿四小時心電圖紀錄、心臟超音波、腦部電腦斷層、超音波、穿透頭顱骨部及超音波，及頻斜台檢查)都是正常的。重覆第二次的廿四小時心電圖檢查才發現間歇性房室傳導完全阻斷，最久的心跳停止時間長達19.4秒。病患當時正坐著看電視，感覺兩眼發黑以及胸前。此病患在接受永久性心律調節器植入術後其症狀就完全改善了。

關鍵詞：二支束傳導阻斷，房室傳導完全阻斷，暈厥，廿四小時心電圖

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