

# A Rare Cause of Trauma in the Elderly: Mobitz Type-II Second-Degree Atrioventricular Block

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## ABSTRACT

Cardiac rhythm problems are frequently seen in the geriatric population, and they can experience trauma after syncope. A 78-year-old female was examined for thoracic trauma after falling. With a history of  $\beta$ -blocker use, arterial blood pressure measured 60/30 mmHg and pulse rate was 30 bpm. Electrocardiogram showed a Mobitz type-II second-degree atrioventricular block. There was no response to atropine, so a transcutaneous external pacemaker and after that a transvenous pacemaker were applied. On the 4th day, the pacemaker was removed and the patient was discharged.

**Key words:** Geriatrics. Thoracic injuries. Rib fractures. Atrioventricular block. Adrenergic beta-antagonists. Pacemaker.

## INTRODUCTION

In the geriatric population, trauma after falling should be considered a result, and the primary reason such as anemia, arrhythmia, hypoxia, hypoglycemia and drugs should be investigated.<sup>1-3</sup>

Atrioventricular (AV) block, is defined as slowing down or blockade in electrical activity that starts from the Sinoatrial node and innervates ventricular muscles by passing through the Atrioventricular node. There are three types of AV blocks; first-degree, second-degree (Mobitz type-I and type-II), and third-degree AV blocks.<sup>4</sup>

A Mobitz type-II second-degree atrioventricular block was detected in a woman with multiple rib fractures after falling which drew attention to the cardiac problems that led to trauma in the geriatric population.

## CASE REPORT

A 78-year-old female was referred to our hospital with a diagnosis of rib fractures after falling. Past history included 16 years of treatment of coronary artery disease, hypertension, and type-II Diabetes mellitus. The patient was regularly using Metoprolol succinate, Isosorbid-5-mononitrate, Acetylsalicylic acid, and Acarbose.

On physical examination, she was conscious. Her arterial blood pressure was 60/30 mmHg, and heart rate was 30 bpm. Both hemithoraxes were participating in the respiration, and there was tenderness in palpation of the right hemithorax.

Laboratory findings were haemoglobin level 11.2 g/dl and blood glucose level of 132 mg/dl. An electrocardiogram (ECG) revealed Mobitz type-II second-degree atrioventricular block (2:1; Figure 1). So, Atropine 0.5 mg was started intravenously. The same dose was given to the patient every 3 minutes due to a lack of response, for a total dose of 3.0 mg. However, there was no change in rhythm, so a transcutaneous external pacemaker was inserted in the emergency room, immediately after which a temporary transvenous pacemaker was inserted in the catheter angiography unit. The patient's pulse increased to 75 bpm (Figure 2) and arterial blood pressure to 90/60 mmHg. In addition, a chest roentgenogram showed non-complicated fractures in the right 6th, 7th, and 8th ribs (Figure 3).

Without  $\beta$ -blocker treatment, she had an average heart rate of 65 bpm and normotensive blood pressure on the 4th day so the pacemaker was removed. Efficient analgesia was performed for the rib fractures. The patient was generally healed and was discharged. She remained asymptomatic at a 3 months follow-up.



**Figure 1:** First patient ECG: Mobitz type-II second-degree atrioventricular block (2:1).

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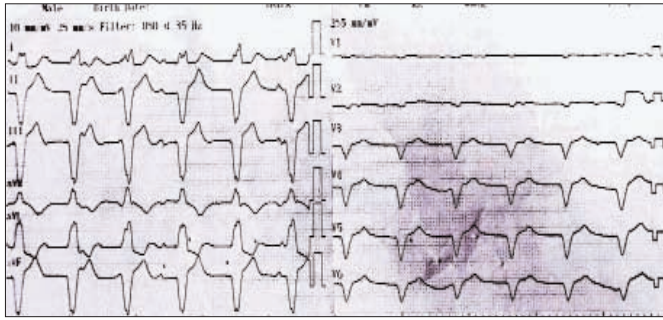


Figure 2: ECG of pace rhythm after transvenous pacemaker intervention.



Figure 3: Chest roentgenogram showing non-complicated fractures in the posterior part of the right 6th, 7th, and 8th ribs.

## DISCUSSION

Geriatric cases of falls should not be thought of simply as a natural trauma of getting older, but also as a warning symptom, and its causes should be evaluated. Chronic diseases, drugs, previous diseases/surgeries, allergies, and health status prior to the trauma should be looked for.<sup>3,5-7</sup> The physicians should also question the causes of the trauma and decide which test should be done as priority in emergency room conditions.<sup>6</sup> In this case, the patient was taking several medicines for her coronary artery disease, hypertension, and type-II Diabetes mellitus. So first an abnormal glycemic state was excluded and then Mobitz type-II second-degree atrioventricular block (2:1) was detected with ECG, which changed the treatment priority. Otherwise, the treatment process would have included chest roentgenogram and requisite treatment for a regular trauma patient with rib fracture, and the more severe cardiac problem might have gone un-noticed.

Atropine-resistant Mobitz type-II second-degree atrioventricular block cases may be treated by transcutaneous external pacing; some patients may be treated with transvenous cardiac pacing, if needed.<sup>8</sup> In this case, the block was treated with Atropine first, but lack of response required a transcutaneous external pacemaker until the transvenous pacemaker was

established. In the follow-up, the transvenous pacemaker was removed when the block was overcome.

Generally, cardioselective  $\beta$ -blocker agents such as Metoprolol remove sympathetic nerve tonus. Sinus bradycardia and AV blocks are included in the side effects of these drugs but patients usually respond to atropine treatment and return to normal rhythm. In this case,  $\beta$ -blocker use caused the AV block and thus, syncope. On the other hand, among repairable causes of AV blocks, the effects of  $\beta$ -blocker usage return to normal when the medicine is stopped and totally eliminated from the body. Therefore, 4 days after the  $\beta$ -blocker treatment was stopped, the patient's pulse and arterial blood pressure became normal and stable, so the pacemaker was removed. Regular Acetylsalicylic acid use was another problem in this case. Existing thoracic trauma can cause late haemothorax or subcutaneous haematoma by way of thrombocyte dysfunction caused by Acetylsalicylic acid use. Acetylsalicylic acid was stopped as soon as the patient was hospitalized, and bleeding was checked by examining the traumatized region and the chest roentgenogram.

Geriatric cases may not tolerate chest trauma after falling, and in particular rib and sternum fractures are frequently seen in osteoporotic bones.<sup>8</sup> The main treatment concept should include efficient analgesia and respiratory physiotherapy for expectorating secretions that may cause atelectasis and pneumonia-like complications. In this case, patient-controlled analgesia was achieved by Tramadol HCL, and mucolytic preparations were used.

Even though symptomatic arrhythmias secondary to myocardial contusion following thoracic trauma are frequently reported in the literature, trauma that develops secondary to coexisting cardiac problem, as in this case, is rare.<sup>9,10</sup>

Finally, in the geriatric trauma cases, etiological life-threatening causes such as cardiac rhythm disorders should also be kept in mind, and further cardiac investigations should be conducted.

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