

## Delayed 31st day traumatic hemothorax on acenocoumarol for aortic valve replacement

### Aortik kapak replasmanına yönelik asenokumarol kullanımı sırasında 31. günde meydana gelen geç travmatik hemotoraks

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A 48-year-old man, on acenocoumarol due to past aortic valve replacement, was referred to our emergency department for left thoracic pain, progressive dyspnea and fatigue gradually worsening over the past 24 hours. Thirty-one days ago he had suffered from left rib fractures due to a fall, while 15 days ago his regular follow-up chest X-ray was negative for hemopneumothorax. On admission, chest X-ray revealed left pleural effusion, while his peripheral blood hematocrit was 28% and the INR 3.57. Following plasma transfusion his INR recovered to two, but five hours later his blood hematocrit dropped to 22.6%. The hemothorax was then drained by a chest tube and followed by blood transfusion. Acenocoumarol might not have been the initiating factor of delayed hemothorax, but could be blamed for the exacerbation of bleeding. It is recommended that all patients with rib fractures, receiving anticoagulants should have a close surveillance until the 4th week post-injury.

**Key Words:** Acenocoumarole; blunt trauma; hemothorax; rib fracture/complication.

Aortik kapak replasmanı sonrasında asenokumarol kullanan 48 yaşında bir erkek, son 24 saat içinde sol torasik bölgede ağrı, ilerleyici dispne ve giderek kötüleşen tarzdahalsizlik gelişmesi nedeniyle acil servise başvurdu. Hastada, 31 gün önce düşme nedeniyle sol kaburgalarında kırıklar gelişmişti ve 15 gün önce çekilen toraks grafisinde hemopnömotoraks bulunmuyordu. Hastaneye yatırılma sırasında çekilen göğüs filmi sol plevral efüzyon bulunduğunu ortaya koyarken, hastanın periferik kan hematokrit değeri %28 ve INR değeri de 3,57 idi. Plazma transfüzyonundan sonra hastanın INR değeri ikiye düştü, ancak beş saat sonra kan hematokrit değeri %22,6 seviyesine indi. Hemotoraks, bir göğüs tüpü yoluyla drene edildi ve daha sonra da kan transfüzyonu gerçekleştirildi. Asenokumarol geç hemotoraksı başlatan faktör olmayabilir, ancak kanamanın artmasından sorumlu tutulabilir. Antikoagülan alan ve kaburga kırığı bulunan bütün hastaların, travma sonrası 4. haftaya kadar yakın bir gözetimde tutulması önerilir.

**Anahtar Sözcükler:** Asenokumarol; hemotoraks; kaburga kırıkları/komplikasyon; künt travma.

Blunt thoracic trauma, with or without rib fractures, is increasingly encountered in emergency departments. Along with an increase of vitamin K antagonists indications, the incidence of delayed hemothorax (DHTX), though infrequently reported, remains to be a major concern. An up-to-date MEDLINE search revealed only three reports of DHTX

occurring within four weeks following blunt thoracic trauma.<sup>[1-3]</sup> We present a case of DHTX occurring on 31st day following rib fractures, while on acenocoumarol (Sintrom, Ciba-Geigy) due to aortic valve replacement. To our knowledge, such a delayed complication of blunt thoracic trauma has not been previously reported while on regular anticoagulants.

## CASE REPORT

A 48-year-old man was referred to our department for left thoracic pain and fatigue worsening over the past 24 hours. One month ago he had been hospitalized in another hospital for left rib fractures (9th, 10th and 11th rib) due to a fall. Two days before admission he remembered a sharp pain on the side of his rib fractures while attempting to sleep on the injured side, for the first time post-injury. The pain subsided but the next day he felt a worsening shortness of breath.

On presentation he was stable with a blood pressure of 100/70 mmHg, 95 pulses/minute, 19 breaths/min and pulse oximetry 93%, while physical examination revealed dull sounds on percussion, diminished respiratory sounds on auscultation and mild tenderness on his left lower thorax. His medical history included an aortic valve replacement with a mechanical prosthesis because of which he was on acenocoumarol for the last five years. Laboratory tests revealed anemia (Hct: 28%) and an INR of 3.57.

The chest X-ray (CXR) and subsequent computer tomography revealed a left pleural effusion but interestingly, CXR which had been taken 15 days ago during his follow-up for his chest wall trauma was negative for hemopneumothorax (Fig. 1 and 2). While no history of additional injury during the intermediate interval was reported. Needle aspira-

tion was positive for blood (Hct: 30%). Acenocoumarol was discontinued and the patient was admitted to the high-dependency unit. An attempt was made to normalize the INR by transfusing three units of fresh frozen plasma, which resulted, five hours later, in an INR of 2, while his blood count showed a hematocrit fall to 22.6%. A chest tube was placed and 1650 mL of blood (Hct 37.7%) were drained directly. Two units of blood were administered. During following days his hematocrit recovered, chest tube drainage subsided and chest tube was removed on the 15th post admission day. Low molecular weight heparin had been initiated on the third day post-admission and an increasing dose of acenocoumarol was administered to reach the desired levels of INR. The patient was discharged on the twentieth day post-admittance, with a hematocrit of 38.9% and an INR of 2.8. Three years later he is doing well with no relevant symptoms.

## DISCUSSION

We have reported a case of DHTX occurred 31 days after three left rib fractures in a patient on acenocoumarol. Such an emergency suggests us to obtain a high index of suspicion for a delayed bleeding, complicating such injuries, especially when patients receive anticoagulants. We hypothesize that anticoagulation therapy was not the initiating factor, since an INR of 3.57 should not lead to



**Fig. 1.** Posteroanterior chest X-ray 15 days before admission. Note the sternum sutures indicating the aortic valve repair five years ago and 9th and 10th left rib fractures due to trauma 31 days before admission.



**Fig. 2.** Posteroanterior chest X-ray on admission. A large left pleural effusion indicating the delayed hemothorax is prominent.

spontaneous hemothorax. However, anticoagulants could be blamed for the exacerbation of bleeding. Coughing, maximum ventilatory maneuvers or vigorous activity are potential risk factors for DHTX, especially when powerful pain killers are administered to permit “painless” respiratory function and daily activities. When anticoagulants are administered the impact of these risk factors is increased. Therefore, even though unclear in the present case, we believe that one of these factors set the stage for redisplacement of fracture fragments by stretching and tearing of intercostal pedicles.<sup>[4]</sup>

Delayed hemothorax has been described to follow rib fractures within 3-6 h or up to a few days.<sup>[5]</sup> A DHTX incident following blunt thoracic trauma and being diagnosed more than four weeks later is a very uncommon situation, reported three times in literature.<sup>[1-3]</sup> In our case, not only the long interval, but also the potential role of acenocoumarol, made this incident unique. The normal 15th day CXR film confirms the true delayed event and not just a “missed injury”.

Acenocoumarol is a vitamin K antagonist used for long term anticoagulation therapies. Its complication is bleeding and this is why we assume that

acenocoumarol contributed to the creation of a massive DHTX. Potentially, during the healing-procedure of the microvascular trauma of the displaced rib fractures small recurrent hemorrhages occurred, which in the presence of acenocoumarol resulted in the hemothorax.

Concluding, it is recommended that all rib fractures, especially in patients receiving anticoagulants, should not only be re-evaluated in 48-72 hours, but also three and four weeks post-injury.

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