

Spontaneous Bilateral Ear Bleeding: A Rare Presentation of Hypertensive Emergency

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Abstract

A medical emergency of a life-threatening condition known as a hypertensive emergency is marked by a sudden, severe increase in blood pressure together with dysfunction of vital organs. This case report presents a rare occurrence of hypertensive emergency in an 81-year-old woman. She presented with acute bilateral ear bleeding preceded by a transient loss of consciousness and slurred speech. Bedside otoscope examination revealed minimal blood clots in the external auditory canal (EAC) and redness over the tympanic membrane, reflecting the hemotympanum. A computed tomography (CT) scan of the brain revealed fluid within the right mastoid air cell with no evidence of intracranial haemorrhage. This case illustrates the need for proper assessment and evaluation in patients presenting with sudden onset of bilateral ear bleeding associated with other systemic complaints. Spontaneous bilateral ear bleeding associated with other neurological deficits should be identified as a hypertensive emergency, prompting tight blood pressure control in a timely manner.

Keywords: Spontaneous bilateral ear bleeding, hypertensive emergency

INTRODUCTION

A hypertensive emergency is defined as a systolic blood pressure greater than 180 mmHg and/or diastolic blood pressure greater than 120 mmHg, accompanied by new or progressive end-organ damage or complications.¹ A classical presentation of a patient with a hypertensive emergency is an acute increase in blood pressure with symptoms of organ failure from various aetiologies. Patients may present with life-threatening conditions such as encephalopathy, acute left ventricular relaxation associated with acute myocardial infarction or unstable angina, aortic dissection, subarachnoid haemorrhage, ischemic stroke and severe pre-eclampsia or eclampsia.² On the other hand, epistaxis is relatively common in hypertensive patients compared with spontaneous bilateral ear bleeding. It is uncommon, possibly attributed to the high vascular pressure, and requires prompt recognition and management. We present a case of acute spontaneous bilateral ear bleeding in a patient experiencing a hypertensive emergency.

CASE PRESENTATION

An 81-year-old woman with underlying hypertension and diabetes mellitus was brought by her family to the emergency department (ED) due to a reduced level of consciousness associated with spontaneous bilateral ear bleeding. She had been non-compliant with her anti-hypertensive medications for years and was not on any anticoagulant. She was well known prior to presenting with symptoms and had no history of ear problems, chest pain, headache, falls or trauma before the event. Her daughter found her unresponsive in bed with bilateral ear bleeding and no observed abnormal movements. She was brought to the nearest clinic immediately. Her systolic blood pressure was documented to be greater than 200 mmHg, prompting her referral to the hospital. Fortunately, she regained full consciousness while en route to the hospital, but she continued to have slurring of speech.

In the ED, she was alert and obeyed commands. Her supine blood pressure was 167/63 mmHg, and her pulse rate was 89 beats per minute. Her respiratory

rate was 18 breaths per minute, her oxygen saturation (SpO₂) was 99% on room air, her temperature was 37 °C, and her blood sugar level was 7.3 mmol/L. Examination revealed that her motor power for all limbs was 4+/5, whereas other central nervous system examinations were normal. Additionally, her cranial nerve examination, specifically the examination of CN VIII, was intact. Otoscope examination revealed minimal blood clots in the external auditory canal (EAC) of the right ear, accompanied by redness of its tympanic membrane, which was consistent with the hemotympanum. Conversely, the tympanic membrane of the left ear was not visualised because of the pooling of blood in the EAC. Other systemic examinations were unremarkable. No bruises or petechial rashes were observed.

Her laboratory test results, including a full blood count (FBC), renal profile, liver profile, coagulation profile, C-reactive protein (CRP), and electrolytes (calcium, magnesium, and phosphates), were within the normal range, except for a low potassium level of 2.8 mmol/L. A CT scan of the brain revealed fluid within the bilateral external ear canals, with a Hounsfield unit (HU) range of 40–80, indicating the presence of a blood product. The middle and inner ears were clear, and there was no evidence of intracranial haemorrhage (Figs. 1 and 2).

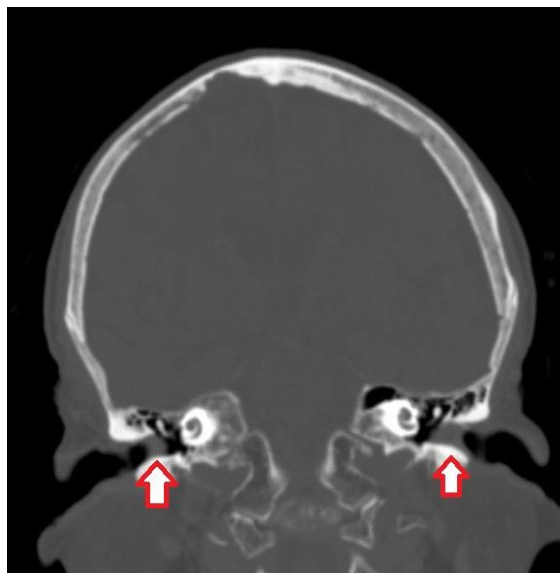


Figure 1: CT of a brain without contrast in the bone window showing fluid within the bilateral external ear canals (arrows), with a HU of 40–80, which indicates the presence of blood.

In the ED, close monitoring of her blood pressure and cotton ball charting for bilateral ear bleeding were performed. She received subsequent management from the neuromedical and otorhinolaryngology teams. A diagnosis of transient ischaemic attack (TIA) with spontaneous bilateral ear bleeding secondary to a

hypertensive emergency was determined. However, antiplatelet therapy was deferred for 24 hours to monitor bilateral ear bleeding, ensuring a careful assessment of the benefits of ischemic event prevention versus the risk of exacerbating bleeding. Additionally, aspirin administration within 48 hours remains beneficial for reducing the risk of recurrent stroke and mortality.³ Throughout her hospitalisation, her blood pressure was well controlled with medication, and there were no further instances of ear bleeding. After a three-day stay, she was discharged and scheduled for follow-up at the respective clinic. Unfortunately, she did not attend the appointment and was uncontactable. Hence, we were unable to determine her health condition.



Figure 2: CT of a brain without contrast in the brain window showing no evidence of intracranial hemorrhage

DISCUSSION

Hypertensive emergencies are among the common presentations in the ED and can be fatal if not treated promptly. In Malaysia, 40.7% of the adult cohort had prehypertension, and 38% had hypertension.⁴ Patients with uncontrolled hypertension can develop complications, as reported previously. Approximately 1%–3% of hypertensive patients experience hypertensive emergencies.⁵ Blood pressure should be reduced by 25% within three to twelve hours, depending on the extent of target organ damage (TOD).¹ Hence, with precise treatment, TOD can be alleviated, and morbidity and mortality can be prevented.

Any bleeding that is unresponsive to the usual local measures, in association with a highly elevated BP, can be classified as a hypertensive emergency. The most

common bleeding sites are the nose, kidney/bladder, and surgical sites.⁶ Several published literature reported an association between epistaxis and hypertension. In 2023, Bereda G reported a case of anterior epistaxis in a hypertensive patient who was not compliant with anti-hypertensive medication.⁷ A retrospective cohort study by Byun et al. revealed that patients with hypertension had an increased risk of epistaxis and required hospital visits.⁸ There are no case reports published yet on hypertensive emergencies associated with spontaneous bilateral ear bleeding, as described in this case. Complete noncompliance with anti-hypertensive medication contributed to her hypertensive emergency.

Examination of the ears revealed blood in the bilateral external auditory canal without any evidence of suspected ear trauma. In addition, this patient also presented with neurological symptoms; hence, a CT scan without contrast of the brain was performed. The findings revealed fluid within the right mastoid air cell, age-related cerebral atrophy and multifocal chronic lacunar infarcts.

Ear bleeding can arise from local causes, such as infection or trauma, and is usually unilateral. However, if the causes are hypertension, barotrauma or anticoagulant use, the manifestations could be bilateral. In 2006, Balatsouras et al. reported a case of spontaneous bilateral hemotympanum in a patient who was on anticoagulant with the concurrent intake of nonsteroidal anti-inflammatory drugs (NSAIDs).⁹ However, in this case, the patient was not on anticoagulants or NSAIDs.

The blood supply to the ear varies among the outer, middle, and inner ear, from which each ear receives blood from different arteries. The occipital artery and posterior auricular and anterior auricular arteries supply the outer ear. The middle ear includes structures such as the tympanic cavity and ossicles. Its blood supply is derived from the mastoid branch of either the occipital or posterior auricular arteries and the deep auricular artery. The blood supply to the inner ear is derived primarily from the labyrinthine artery, which is typically a branch of the anterior inferior cerebellar artery.

Long-term hypertension can compromise vascular integrity throughout the body, including that of the vessels supplying the ear. The EAC has very superficial microvasculature, and many insults can easily damage it. Atherosclerosis and vascular fragility, especially in elderly individuals, can weaken the microvasculature in the EAC, leading to rupture, as occurred in this patient. These vascular changes, resulting from

severely elevated blood pressure, can also be observed in the retina, manifesting as retinal haemorrhage.¹⁰

A case report by Petri et al. described a 50-year-old woman with sudden left ear bleeding (otorrhagia) and severely elevated blood pressure (210/100 mmHg).¹¹ Examination revealed a perforated tympanic membrane with a pulsatile mass, and CT angiography confirmed that the internal carotid artery aneurysm extended into the middle ear. This case highlights that uncontrolled hypertension can lead to vascular complications, such as aneurysms or ruptures, which may present as otorrhagia and hemotympanum.

Moreover, aging blood vessels lose elasticity, which impairs their ability to regulate blood flow effectively and increases their susceptibility to rupture under high pressure.¹² This may explain the bilateral ear bleeding observed in this case. In this case, spontaneous bilateral ear bleeding in a hypertensive emergency is a rare presentation, and the association is unclear. There are also almost no data on the association between hypertension and ear bleeding, particularly with respect to hypertension severity grades I-III; thus, further studies are needed.

In our patient, ear bleeding stopped spontaneously as the high blood pressure was reduced. During her hospital stay, anti-hypertensive therapy was administered to control her blood pressure, effectively preventing the recurrence of ear bleeding and reducing the risk of further neurological damage. Our case demonstrates that spontaneous bilateral ear bleeding can be a rare manifestation of hypertensive crisis, underscoring the critical importance of prompt blood pressure management to prevent permanent neurological sequelae.

CONCLUSION

Acute, unprovoked, spontaneous bilateral ear bleeding in a rare clinical presentation of hypertensive crisis. When accompanied by neurological deficits, a hypertensive emergency may occur, necessitating urgent blood pressure management and a multidisciplinary team approach.

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DECLARATIONS

The authors have obtained consent to publish this study. Patient anonymity was preserved, and this article does not contain any personal or demographic details that can be linked to patient identification. The author(s) received no financial support for the research, authorship, and/or publication of this article. The author(s) declare that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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