Reminder of important clinical lesson

An unusual case of systemic cardiovascular side effects from the application of over-the-counter nasal decongestion drops

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Summary

A 78-year-old female with a history of stable angina, phoned for advice with chest pains following the application of 0.5% ephedrine nasal drops for nasal congestion, which she had bought over-the-counter on the recommendation of a pharmacist. On applying the medication, she developed chest pain which she recognised as her angina. The Foundation Year 2 general practitioner on duty consulted the British National Formulary (BNF), issue 56 and thought that nasal decongestant induced angina was unlikely and advised the patient to seek emergency attention should she have any further episodes. After re-applying the medication and suffering the same symptoms, the patient later presented to the Emergency Department. The patient had the relevant tests and was diagnosed with 'ephedrine-induced angina'. This settled on withdrawal of the medication and she had no further episodes of chest pain in the following 6 months.

BACKGROUND

Ostensibly, this case report may seem somewhat trivial. It is well known that ephedrine, when administered systemically, has the potential to cause angina,¹ owing to its chronotropic effect via β -1 receptors in the heart.² The BNF of the time (56) states that parenteral ephedrine may cause anginal pain and that its use is cautioned in patients with ischaemic heart disease (IHD). Ephedrine hydrochloride 0.5% nasal drops, however, are not cautioned in these patients. BNF 56 states only that 'cardiovascular effects also reported'¹ and no reported cases of ephedrine nasal drop angina were found during a Medline search.

Similarly, information leaflets in most European countries contain some warning about the safety of ephedrine or similar nasal drops in patients with 'cardiovascular disease', suggesting 'caution' or 'advice from the family doctor'. Hypertension and tachycardia are quoted as contraindications or adverse effects in some proprietary preparations. However, these warnings are too generic and therefore ineffective. The concept that during minor sympathetic stimulation, and likely hypertension and tachycardia, stable angina might change into a condition mimicking unstable angina (an acute coronary syndrome) is not at all banal and deserves more attention.

CASE PRESENTATION

A 78-year-old female with known but well controlled IHD phoned her general practitioner (GP) practice for advice following what she suspected was an adverse drug reaction.

The patient had no known allergies, had not used the drug before and had not previously experienced any adverse drug reactions. She had not experienced angina symptoms for at least 4 months before the day in question. It was, therefore, a highly worrying period for the patient

as she was unsure as to whether her heart condition was deteriorating.

Having purchased 0.5% ephedrine hydrochloride nasal drops for nasal congestion and applied the medication according to the manufacturer's instructions, she experienced a feeling of tightness and a dull, heavy, central chest pain, accompanied by some shortness of breath. The patient found that these symptoms lasted for between 5 and 10 min before remitting following rest and recognised the episodes as angina. This scenario occurred twice more before she phoned her GP surgery for advice that evening, each time shortly after administration of the nasal drops.

The doctor on call, a foundation year 2 trainee, took the history over the phone and found that the patient had been exerting herself on at least one occasion by hanging out washing. She referred to the BNF (issue 56) and found that it stated simply that 'cardiovascular effects (are) also reported'.¹ Its use was not cautioned or contraindicated in IHD patients, unlike the listing for parenteral ephedrine hydrochloride, which, at typical doses of around 6 mg, is a much higher dose than those found in the nasal drops. The latest issue of the online BNF³ has since rectified this by cautioning usage in the same patient groups for parenteral and nasal ephedrine, including those with IHD.

Putting the exertion, the existing IHD and the BNF listing together the consulting doctor thought an adverse drug reaction unlikely and informed the patient as such. Unfortunately, although this pattern of three short but severe episodes of angina ought to be considered as crescendo or unstable angina and almost certainly should be treated and investigated as an acute coronary syndrome, the patient was told that if she had any further symptoms she should self-refer to the Emergency Department.

The patient subsequently used the medication for a fourth time, experienced the same symptoms and called an

ambulance. Following investigation, and overnight observation with no further symptoms apparent after excluding the ephedrine, she was discharged with a diagnosis of 'ephedrine-induced angina'.

INVESTIGATIONS

There were no ischaemic changes on serial 12-lead ECGs taken in hospital.

Serum troponin measured 12 h after pain was within normal limits.

DIFFERENTIAL DIAGNOSIS

Ephedrine-induced angina

Unstable angina (acute coronary syndrome).

TREATMENT

No treatment was necessary as the symptoms resolved following exclusion of the ephedrine.

OUTCOME AND FOLLOW-UP

Six months after the episode the patient has been free of angina symptoms for the duration of the follow-up period. She has not used ephedrine nasal drops within that period.

DISCUSSION

A literature search, including a search of Medline, revealed no similar published cases. However, it seems likely that similar events have occurred and been misinterpreted, as would have happened in this case had the patient not exposed herself to the drug for a fourth time.

This patient ought to have been immediately referred in to the medical take at her local hospital after the initial consultation with her GP as the symptoms she described were those of an acute coronary syndrome. Fortunately, she did not come to any harm as a result of the delay in presentation.

On admission, this patient had a history consistent with unstable angina, progressing from her previously stable disease. She had a Global Registry of Acute Coronary Events score suggestive of a 5% risk of mortality at 6 months and

the latest guidelines from the National Institute of Clinical Excellence recommend that such a patient should be offered a platelet IIb/IIIa glycoprotein inhibitor such as tirofiban or eptifibatide, treated with 12 months of clopidogrel and ought to have inpatient angiography with appropriate treatment based on the findings. In this case, however, the history was exceptional and once the precipitant cause of the chest pain had been excluded, it was accepted that the patient did not have unstable angina. This highlights that guidelines can never cover every eventuality and that clinical judgement should not be superseded.

Learning points

- ▶ Caution should be used in patients with IHD when using sympathomimetic, no matter how seemingly innocuous
- ▶ The nasal mucosa is an effective method of delivery of drugs into the systemic circulation and this should be remembered when prescribing drugs for their local effect
- ▶ Increasing frequency of anginal attacks during normal daily activities should be considered an acute coronary syndrome until proven otherwise and the patient ought to be referred for acute medical assessment immediately
- ▶ Patients often have a good idea of what might be causing their problems and their opinions should be carefully considered.

Competing interests None.

Patient consent Obtained.

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