CASE REPORT

Of little yellow men and a fear of the light

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SUMMARY

We report the case of a 65-year-old woman presenting with recurrent vomiting for 3 days. She had been previously diagnosed with an atrial septal defect and was on treatment with diuretics and digoxin for paroxysmal supraventricular tachycardia. The clinical examination was consistent with an atrial septal defect with severe pulmonary hypertension. Electrocardiography showed complete heart block with ST-segment changes suggestive of digitalis toxicity. Transthoracic echocardiography confirmed Eisenmengerisation. Serum digoxin levels were elevated. Following hospitalisation, she was diagnosed with photophobia when she persistently asked for ambient lighting to be switched off. Most interestingly, the patient kept reporting seeing little yellow men, which was how she perceived the attending doctors. Cessation of digoxin therapy led to progressive abatement of her symptoms.

BACKGROUND

Cardiac glycosides such as digoxin are unique among the various classes of cardiovascular drugs in having a comparatively narrow therapeutic range, and have gained considerable notoriety for the severe and even life-threatening adverse effects that can be seen with overdosing.¹ Of the various adverse effects that have been described in conjunction with digoxin, the most dangerous and therefore best characterised are cardiac arrhythmias. In comparison, visual disturbances are relatively rare and often benign, and thus often overlooked among the constellation of signs and symptoms observed in patients with digoxin toxicity. Nevertheless such symptoms can be considerably disabling, as was seen in this instance. This case thus highlights the visual symptoms of digoxin toxicity and demonstrates the degree to which they can impact a patient's life.

CASE PRESENTATION

A 65-year-old woman presented with recurrent vomiting for 3 days not associated with abdominal pain or haematemesis, which had persisted despite symptomatic treatment with antiemetics. There was no history of headache or fever.

She had been diagnosed previously with a cardiac disorder, and had been receiving multiple drugs for the past 6 months. She claimed to be compliant on therapy, despite the episodes of vomiting. At the time of receiving a cardiac diagnosis, she had suffered from several bouts of palpitation; at the time of presentation to our hospital, however, cardiac symptoms were limited to severe fatigue.

She denied any history of substance abuse. Family history was not contributory.

At admission, the patient was haemodynamically stable. Bradycardia was noted. General physical examination revealed central cyanosis, which did not improve with oxygen supplementation and grade 2 clubbing. Jugular venous pressure was normal, with occasional cannon A waves. Peripheral oedema was absent. There were no stigmata of infective endocarditis. Cardiovascular examination showed a palpable P2, and a prominent left parasternal heave with an outwardly displaced apical impulse. Narrow and fixed splitting of the second heart sound was audible, with a loud pulmonary component. A harsh ejection systolic murmur was present in the pulmonary area. Examination of other systems was normal.

After admission to the cardiac care unit, the patient repeatedly asked for ambient lighting to be switched off. When questioned, she explained that the light hurt her eyes. Further questioning then revealed the presence of photophobia for 1 month prior to admission, which was severe enough to confine her to her home for the last month, to the extent that she demanded sunglasses when persistent vomiting necessitated a visit to our hospital. Another less troubling and initially unreported visual symptom was later discovered when she began referring to little yellow men; subsequently it was determined that this was how she perceived the attending doctors, and thus probably a form of visual hallucination.

INVESTIGATIONS

Routine laboratory investigations showed normal blood counts, liver and renal function tests and serum electrolytes. An ECG showed right axis deviation, right ventricular hypertrophy and complete heart block with ST-segment changes suggestive of digitalis toxicity (figure 1). A transthoracic echocardiography confirmed the presence of a large ostium secundum atrial septal defect measuring 40 mm with bidirectional shunting, severe pulmonary arterial hypertension and dilated right atrium and ventricle, consistent with Eisenmengerisation.

Serum digoxin levels were elevated at 3.63 ng/mL (normal range: 0.8–2 ng/mL).

An ophthalmology consultation was sought for her visual symptoms. Colour vision evaluation with pseudoisochromatic charts of Ishihara showed bilateral red–green deficits. Visual acuity was normal.

DIFFERENTIAL DIAGNOSIS

- Complete heart block, xanthopsia and photophobia secondary to digoxin toxicity
- Ostium secundum atrial septal defect with Eisenmenger's syndrome

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Figure 1 ECG showing right axis deviation, right ventricular hypertrophy (tall r wave in lead V1) and complete heart block with ST-segment changes suggestive of digitalis toxicity (note reverse tick mark sign). p Waves have been marked by black arrows. *indicates a distorted p wave immediately after a t wave.

TREATMENT

Digoxin was immediately stopped. Diuretics were continued for pulmonary hypertension.

OUTCOME AND FOLLOW-UP

The patient reverted to sinus rhythm within 72 h of cessation of digoxin. Subjective improvement in visual symptoms was reported by the patient over the following week. The patient was subsequently discharged on medical therapy.

DISCUSSION

Xanthopsia or yellow vision, photophobia and hallucinations constitute the classical visual manifestations of digoxin toxicity.² All these three symptoms were observed in our patient. Other prominent features of digoxin toxicity include anorexia, nausea and vomiting, confusion and cardiac arrhythmias.¹ The presence of vomiting and complete heart block in this instance was thus corroboratory of digoxin toxicity.

The unusual visual disturbances described in association with digoxin overdose have expectedly earned a general awareness among the medical fraternity. Nevertheless, it appears that primary presentation with visual symptoms is restricted to only a small minority of patients diagnosed with toxicity. For instance, a large hospital-based study identified only one such case out of 148 subjects³; other isolated cases were reported by Closson³ and Nagai *et al.*⁴ A recently reported case by Kolev⁵ detailed a case of digoxin toxicity with disturbed colour vision; however, this was not a presenting symptom in the patient in question.

The diagnosis of digoxin toxicity is based on a compatible clinical scenario, electrocardiographic changes and an elevated serum digoxin level. Once the diagnosis has been made, therapeutic strategies include immediate cessation of therapy,

administration of activated charcoal and correction of hypokalaemia in appropriate instances.⁶ Treatment with digoxin-specific antibody fragments is very effective¹; however, cost of therapy and the minor risk of anaphylaxis effectively restrict their use to patients with life-threatening cardiac arrhythmias in resource-constrained settings. Although the presence of a complete heart block in our patient warranted administration of antibody fragments, unavailability of these fragments at our hospital and the presence of facilities for emergent cardiac pacing prompted expectant management after the cessation of digoxin therapy.

The subjective nature of the patient's visual symptoms implies that they are readily overlooked among multiple and often overwhelming concomitant cardiac symptoms in patients on digoxin therapy, especially in the settings of a cardiac care unit. It is likely that such under-diagnosis and consequent under-reporting has contributed to the relative dearth of reports on primary presentation with visual toxicity among patients with digoxin overdose. Maintaining a high index of suspicion and meticulous history-taking are crucial in diagnosing the bizarre and surprisingly disabling visual complications of a digoxin overdose.

Learning points

- ▶ Digoxin toxicity can manifest with multiple visual symptoms which can occasionally be disabling to the patient.
- ▶ Primary presentation with visual disturbance is rare but potentially under-diagnosed in patients with digoxin overdose.
- ▶ Careful questioning is the key to diagnosing these visual complications.

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Competing interests None.

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