CASE REPORT

Cardiovascular toxicity associated with yew leaf ingestion

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Abstract

Multiform ventricular tachycardia and self-terminating ventricular fibrillation developed in a 16 year old girl who had deliberately eaten yew tree leaves.

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Hollman has highlighted the therapeutic and toxic effects of plants products in the *British Heart Journal*.¹ This case report illustrates the cardiac toxicity resulting from the deliberate ingestion of leaves of the English yew tree, which has been described as the most toxic plant in Britain.²

Case report

A 16 year old girl attended hospital 11 times in a two month period because of acts of deliberate self harm including an aspirin overdose and ingesting cling film and a torch bulb (fig 1).

She had read of the toxicity of yew and presented after ingesting a handful of the leaves of an English yew tree that grew in the grounds of the secure unit where she was a resident. Vomiting was induced with ipecacuanha, and yew tree leaves were visible in the vomit. She was admitted for observation including cardiac monitoring. Three hours after she had eaten the yew leaves a short burst of broad complex tachycardia was seen. Over the next two hours abdominal pain and nausea developed but her pulse and blood pressure remained normal. A 12 lead electrocardiograph showed sinus rhythm with a QTc of 0.41 seconds. She then had a 10 second run of multiform ventricular tachycardia (fig 2) and seven hours after ingestion, she had a 17 second run of self-terminating ventricular fibrillation (fig 2). Her recovery

Figure 1 Plain abdominal radiograph showing the ingested torch bulb.

Figure 2 Two rhythm strips obtained during continuous electrocardiographic monitoring. The upper trace shows multiform ventricular tachycardia and the lower trace shows ventricular fibrillation.

was otherwise uneventful and she was discharged home 3 days later.

During her admission the yew tree was felled and left for disposal in the grounds of the unit. One day after discharge she and four fellow residents were admitted having ingested yew bark, stripped from the remains of the tree. All were discharged home the next day though the patient was admitted 3 days later claiming to have taken further yew tree bark. Again this admission was uneventful. Over the next 6 weeks she was admitted on two further occasions after episodes of deliberate self-harm and her admissions only ceased when she was transferred to another unit.

Discussion

The English yew (*Taxus baccata*) is one of fifteen different species of the family Taxaceae, others being *Taxus cuspidata* (Japanese yew), *Taxus canadensis* (ground hemlock), and *Taxus brevifolia* (western yew). Growing wild in southern England and having been planted throughout the country for hundreds of years, the English yew was treasured for its wood (allegedly it supplied the wood for Robin Hood's bow). It also gained considerable notoriety because of its toxicity. In antiquity it was known as the tree of death and was dedicated to the Gods of Death. A case of fatal poisoning with *Taxus baccata* was reported by Caesar.³⁻⁵ Current interest in the Taxaceae was stimulated by the success of taxol, a diterpenoid extracted from the bark of *Taxus brevifolia* (western yew), which has unique activities against various malignancies and is presently undergoing clinical trials.⁶

All parts of the yew plant are poisonous except for the fleshy and attractive red fruit. The toxic principles are pseudo-alkaloids known as taxines of which several different varieties exist. Their effect is mainly cardiotoxic, but haemorrhagic gastroenteritis has been described. Other toxic constituents are biflavonoides (which have central nervous system depressant, analgesic, and antipyretic activities) and cyanogenic glycosides.⁷

Usually it is the virtually innocuous fruits that are ingested, predominantly by children under five.⁸ However, in 15 of 49 cases of suspected yew poisoning that were reported to the National Poisons Information Service (London) in 1988 other parts of the tree had been eaten and of these, one patient had moderate symptoms and one died (personal communication NPIS (L)). Fatal ingestion of yew leaves has often been reported. Usually large amounts of yew leaves were eaten or liquid concoctions of yew were consumed.^{3,9,10}

Symptoms of taxus poisoning (nausea, vomiting, abdominal pains, dizziness, and tachycardia) begin after about one hour. There may also be muscular weakness, confu-

sion, and convulsions. As in the present case, ventricular tachycardia and ventricular fibrillation have all been reported. In this particular case, the multiform tachycardia had electrocardiographic features of torsade de pointes though the QT interval was not prolonged. The development of hypotension, complete heart block, and bradycardia indicates a poor prognosis. The bradycardia has repeatedly been found to be refractory to transvenous cardiac pacing.^{3,9} Transcutaneous cardiac pacing was successful in the case of a five year old girl with severe taxine poisoning.¹¹

Treatment otherwise aims at the recovery of yew leaves from the stomach by induced vomiting or gastric emptying. This can be done for several hours after the ingestion because the leaves have a prolonged gastric transit time. In one instance, digoxin-specific FAB antibody fragments were used in the belief that there may be significant cross reactivity with other naturally occurring glycosides. The taxine molecule has structural similarities to digitalis and cross reactivity with glycosides in oleander has previously been shown with digoxin-specific FAB.¹¹ At present, however, digoxin-specific FAB antibody cannot be recommended for the treatment of yew tree poisoning.

Cases of yew tree poisoning are not infrequent in Britain. The National Poisons Information Service (London) received 104 enquiries regarding yew in 1991 (personal communication NPIS (L)) and although such cases are not usually associated with symptoms, cardiologists should be aware of the cardiotoxic effects of the plant.

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