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Pneumomediastinum following Ecstasy (methylenedioxymetamphetamine, MDMA) ingestion in two people at the same 'rave'

Darius Rejali, F.R.C.S., Paul Glen, M.R.C.S., Nicholas Odom, F.R.C.S.

Abstract
Ecstasy is a class A controlled drug often consumed by the young population for recreational purposes. Documented complications of its use include hyperpyrexia, disseminated intravascular coagulation (DIC), renal failure and rhabdomyolysis. We report on two patients who developed pneumomediastinum after Ecstasy abuse. Both patients obtained and consumed the drug at the same establishment and presented to the same hospital within half an hour. The possible pathogenesis of this complication are discussed and the literature reviewed. Pneumomediastinum should be recognized as a possible complication of Ecstasy use. Conservative management is appropriate.

Key words: Amphetamine-Related Disorders; Mediastinal Emphysema

Introduction

Ecstasy is a controlled drug that was developed initially in 1914 as an appetite suppressant.[1] It was discovered to be neurotoxic and has never been licenced for therapeutic use. Ecstasy induces a state of euphoria and is a mild hallucinogen. In the 1980s its illicit use became increasingly widespread particularly in the UK where its use was often associated with social dancing and 'raves'. Recognized complications with occasional fatal consequences include hyperpyrexia, DIC, renal failure and rhabdomyolysis.[2] We report two cases of pneumomediastinum after Ecstasy abuse.

Case reports

Case 1

A previously healthy 23-year-old female, who had consumed half a tablet of Ecstasy at a nightclub seven hours before, presented with chest, back and neck pain and surgical emphysema over the chest and neck. She had vomited once after the onset of the symptoms. She was apyrexial and haemodynamic parameters were satisfactory. Chest and neck X-rays revealed surgical emphysema in the mediastinum and neck (Figure 1). Contrast swallow was normal. She was kept nil by mouth for 24 hours and started on intravenous fluids and antibiotics. Over the next 48 hours oral intake increased and her condition improved. She was discharged four days after admission.

Case 2

A previously healthy 22-year-old male acquaintance of the above patient presented within half an hour of the previous case with a similar history. He had consumed four Ecstasy tablets eight hours before presentation at the

Fig. 1
Surgical emphysema in the neck.

From the Department of Cardiothoracic Surgery, Manchester Royal Infirmary, Manchester, and the Department of Otolaryngology*, Crosshouse Hospital, Kilmarnock, UK.
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same establishment. He developed anterior chest and neck pain. He had surgical emphysema over the neck and chest. He was apyrexial and haemodynamically stable. Chest and neck X-rays showed surgical emphysema in the neck and mediastinum. Contrast swallow showed a small leak at the posterolateral aspect of the mid-oesophagus on the right side. He was kept nil by mouth and given intravenous fluids and antibiotic. A repeat contrast swallow three days later was normal and the patient discharged himself the following day.

Discussion

Over the last two decades the serious, occasionally fatal, consequences of Ecstasy use has been well documented. These include hyperpyrexia, DIC, renal failure and rhabdomyolysis.[2]

Previous cases have reported pneumomediastinum after Ecstasy use but have not been able to demonstrate its origins.[3,4] The above cases are unique in that both patients were friends, developed pneumomediastinum after consuming the drug at the same establishment and presented within half an hour of each other.

Pneumomediastinum has been reported following upper aerodigestive tract diagnostic and therapeutic procedures such as endoscopy. The mechanism being perforation of viscus and escape of air into the mediastinal tissues. It is also associated with conditions of increased intrathoracic pressure including asthma, artificial ventilation and vomiting. The mechanism for the latter is usually perforation of the oesophagus but for the former, rupture of the alveoli and backtracking of the air along the perivascular spaces to the mediastinum is postulated.[5]

Pneumomediastinum has been reported after cocaine and marijuana use.[6] Many people smoking these drugs perform the valsalva manoeuvre to maximize the effects of the drug. This can lead to rupture of the alveoli and lead to pneumomediastinum.

In the cases reported above both patients had attended the same 'rave' venue and are likely to have obtained their Ecstasy from the same 'batch'. When one considers the widespread use of Ecstasy the occurrence of this rare complication at the same time in two people is unlikely to be a coincidence. Many illicit drugs comsumed are not pure. They may contain contaminants such as talc, sugar, quinine and strychnine.[7] It is possible that an adulterant in this 'batch' predisposed to the pneumomediastinum. A corrosive agent can lead to perforation of the oesophagus. This would produce a more serious sequela than that which occurred in the above patients. *Case 2* demonstrated only a small confined leak of contrast from the mid-oesophagus. He had not vomited. Ecstasy is known to cause gastrointestinal dysmotility. This may have led to increased intra-oesophageal pressure and rupture. A small oesophageal tear in *Case 1* could have healed before it was demonstrated on contrast swallow.

Case 1 reported vomiting but this occurred after the onset of the chest pain. An alternative mechanism producing the pneumomediastinum in this case include rise in intrathoracic pressure and rupture of alveoli during strenuous dancing.

The absence of similar reports from America where Ecstasy use is not associated with 'raves' suggested that the dancing or activities accompanying the 'rave' may predispose to the condition. These activities include strenuous prolonged dancing and consumption of large quantities of water.

Although the mechanism of the pneumomediastinum after Ecstasy use is unclear it should be recognized as a complication of its use. The outcome in the above and previous cases is universally good with conservative management.

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Address for correspondence:
D. Rejali,
15 Crosskirk Crescent,
Strathaven,
Lanarkshire ML10 6FG, UK.

E-mail: Darius.rejali@ntlworld.com

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