Case Report

Anaphylaxis to Intravenous Atropine

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Abstract

A 35 year old woman, who was administered intravenous (IV) atropine as a part of anaesthetic management of fibroadenoma of breast, developed anaphylactic shock and required adrenaline to maintain perfusion pressure. Patient improved.
Key Words: Anaphylaxis, atropine.

Introduction

Adverse drug reactions during anaesthesia appear to be on increase and include those of allergic origin [1]. The true incidence is unknown; Fisher & More DG [2] report an incidence of 1 in 5000 to 1 in 20,000 cases, with an associated mortality of 3-4%. The increase in incidence of allergic reactions in the last few years is undisputed(3). This is attributed to the greater number of drugs used peri-operatively, multiplicity of exposure to the same or related drugs and a history of atopy [4].

For an anaphylactic reaction to occur previous exposure to the drug (or similar agent) is necessary. This results in the production of specific antibodies. Re-exposure then induces release of chemical mediators from basophils and mast cells and produces reactions [5]. The non -immune anaphylactoid reactions results from the interaction between the agents and cells which triggers a release of histamine and previous exposure in not necessary. Occasionally both types are reactions are implicated [6] and it is only possible to separate them by specific laboratory tests [7]. We report a anaphylaxis after intravenous administration of atropine.

Case History

A 35 year old woman was scheduled for elective excision of fibroadenoma of right breast. It was ASA(American society of anaesthesiologists) Grade I case with no history of allergy to any drugs and food items in the past. There was no history of previous blood transfusion or any surgery where anaesthesia was administered. Her blood pressure was 120/80 and heart rate was 72 beats /minutes in the anaesthesia room.The plan of anesthesia was to administer 100/ oxygen and if necessary to intubate. Ringer lactate was started and she was given IV atropine 0.01 mg/kg as a part of our anaesthetic management using atropine, ketamine and midazolam. She became anxious and drowsy shortly afterwards, she developed generalized urticaria over the face neck and upper chest and upper limbs also. Her systolic blood pressure dropped from 120mm of Hg to 60 mm of Hg. And the heart rate increased to 120 beats per minute. ST-T segment depression (-2mV) was seen. No error was detected in the monitoring and infusion systems. There were no changes in the cardiac rhythm, end tidal CO2 and oximetry. The patient developed bronchospasm and stopped breathing. She was intubated and ventilated with 100% oxygen. Peripheral pulses were impalpable and there was papillary dilatation but reactive to light. She was placed in the head down position and IV infusion rate of ringer lactate was increased. IV hydrocortisone 200mg and adrenaline 0.5 mg subcutaneously was given. 15 minutes later the blood pressure increased to 100/70 mm of Hg and heart rate came down to 100 beats/minute. Antihistaminics were also given IV, steriods and anti- histaminics were continued to 48 hours.The clinical picture dissolved

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completely in approximately 30 minutes.The surgery was postponed and the patient was monitored and discharged after 2 days.We thought of anaphylaxis to atropine and treated accordingly.

Discussion

There are many reports of adverse reactions after iv atropine (8-12) and development of erythematous rashes over chest, face and neck is very common allergic manifestation. Clinically allergic reactions involve many organs. The severity of symptoms, the onset and duration are extremely variable (Table1).

Table 1. Grades of severity of allergic reactions

Grade	Clinical Features
1	Cutaneous features, erythema, urticaria, flushing, abdominal pain
2	Tachycardia, hypotension, bronchospasm
3	Cardiovascular collapse
4	Cardiac arrest

An allergic reaction occurs and tends to be severe after iv administration as in our patient. Histamine is the essential chemical mediator after anaphylaxis although atleast 20 other chemicals are involved [9].

The clinical symptoms are cutaneous rashes [11] as a result of histamine-provoked capillary dilatation and increased permeability and usually occur over face, neck and upper chest. These rashes disappear in few hours to 1-2 days [5]. The hypotension is caused by vasodilatation and reduced venous return as a result of increased capillary permeability. The tachycardia is due to release of endogenous catecholamines. The reported incidence of cardiovascular collapse after anaphylaxis varies [11]. Le cam et al [13] reported an incidence of only 1 in 5000. This is in contrast to the Fisher and Baldo [9] who reported that cardiovascular collapse was the commonest life threatening features in 82% of patients. The bronchospasm in this case is due to the histamine release .

A severe allergic reaction requires prompt and aggressive treatment [3,6,7]. In this case we have given steroids and antihistamines to counteract anaphylaxis and some have used isoprenaline and diphenhydramine [5,7]. It is very important to detect the drug responsible after allergic reactions. The various methods available are given in Table 2, although intra-dermal testing is probably the easiest and most reliable method [12]. Atropine has been reported to produce an anaphylactoid reaction (10) and an entirely a cell mediated response.

Aguilera L et al, [12] also reported that anaxphyxis due to atropine is rapid and the patient developed urticarial rashes, pruritus, nausea and vomiting. The anesthesiologists should be aware of adverse reactions of all the routine drugs used in anesthetic management [14]. In a study conducted by Aguilera L et al,where a 38 years old woman developed symptoms of anaphylactic shock after intravenous atropine and required adrenaline to maintain perfusion pressure. And a strong positive response was obtained on intradermal testing. The Prausnitz-Kuestner test was positive,which indicated the presence of drug specific IgE antibodies [15].

Table 2. Diagnostic tests after allergic reaction

Primary diagnosis.	Secondary diagnosis
Routine laboratory tests, plasma IgE levels, complement levels, Basophil count	In vivo tests, Intra-dermal tests passive transfer (e.g Prausnit Z Kusestner) In vitro tests, Leucocyte migration inhibition test, lymphoblast transformation test. adio-allergosorbent test, Leucocyte histamine liberation test, Ig E inhibition test.

Conclusion

One should perform above tests post operatively to detect that it is an anaphylaxis and the drug responsible for it. The resuscitation drugs, equipments should be kept ready before administration of any anaesthetic drugs. While injecting drugs, one should look for the skin rashes, depth of breathing and should talk to the patient.

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