

# Three cases of Iohexol induced seizures in paediatric patients undergoing CECT head and the role of pharmacovigilance

Rathaur V<sup>1</sup>, Dutt HK<sup>2</sup>, Rawat V<sup>3</sup> and Joshi P<sup>4</sup>

<sup>1</sup> Department of Paediatrics, <sup>2</sup> Department of Pharmacology, <sup>3</sup> Department of Forensic Medicine, <sup>4</sup> Department of Pathology, Veer Chandra Singh Garhwali Government Medical Sciences & Research Institute, Srinagar, Pauri Garhwal, Uttarakhand, India.

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## ABSTRACT

In the modern era, the highly specific radiological investigation are on an increase and most of them mandates the use of contrast agents. These contrast agents are not free of adverse reactions and some of them are even potentially life threatening. Strictly implementing Knowledge, Awareness and Practice (KAP) in the institution. Contributing knowledge to the medical literature about the incidence of Iohexol induced seizure, which might be on an increase on the global level. Awareness by means of Pharmacovigilance Programme (PvP) to ensure the safety of the patient. Within the short period of three days, three cases of contrast induced seizures were reported by the Department of Paediatric and were treated accordingly. The Department of Pharmacology, expedited all the three cases to the National Co-ordinating Centre, Ghaziabad, India by entering the data into Vigiflow and also directed the chief pharmacist of the drug store to immediately stop the use of Iohexol with same batch number to prevent further risk.

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## INTRODUCTION

Radio contrast agents are a type of medical contrast medium used to improve the visibility and changes in tissues of internal bodily structure in x-ray based imaging technique such as Contrast Enhanced Computed Tomography (CECT) and radiography. Radio contrast are typically iodine or barium compounds. Modern iodinated contrast agents are generally well tolerated (Omnipaque, 2013). Iodine-based contrast media are usually classified as ionic or non-ionic. Both types are used most commonly in radiology due to their relatively harmless interaction with the body and its solubility. Major side effects of radio-contrast media are anaphylactoid reactions and contrast induced nephropathy. Non-ionic contrast media such as Iohexol have been reported to produce fever, seizure, mild to moderate nausea & vomiting whereas typical reactions to contrast media include nausea, vomiting, urticaria, bronchospasm, tachycardia, hypotension, tachypnea, anaphylactoid reaction, convulsion and

seizure (Greenberg and Patterson, 1988; Reagan et al., 1988; Omnipaque, 2013). Acute, potentially life threatening systemic reaction to contrast media are less with low osmolality non ionic contrast agents but they are not totally absent either. Severe reactions remain a reality in all radiology departments. Today, this is the need of hour for strictly implementing Knowledge, Awareness and Practice (KAP) and to strengthen, a must role of pharmacovigilance in medical institutes and hospitals.

## The Cases

In the month of May'2013, three patients were admitted in paediatrics ward of the HNB Base Teaching Hospital, Srikot, Srinagar, Pauri Garhwal on different days and details of each one is given in Table 1. Patients presented with the chief complaints of fever, abnormal movement and vomiting. The treatment was started with injection ( Inj.) Phenytoin, Inj. Midazolam, Inj. Ceftriaxone and Inj. Amikacin. After receiving the treatment, all the three patients did not have any episode of seizures. In order to screen for the probable diagnosis of neurological disorder, the paediatrician advised CECT head. For the procedure, a radiopaque contrast agent; Iohexol (NIOSCAN 300), (Fig. 1) was injected intravenously in the dose of 2ml/kg.

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\* Corresponding Author

Dr Hemant Kumar Dutt, VCSGGMSRI, Srinagar, Pauri Garhwal, Uttarakhand, India. Email: [dr.hemantkdu@yahoo.co.in](mailto:dr.hemantkdu@yahoo.co.in)

**Table. 1 :** Details of the patient undergone ADR with Iohexol, the outcome and the drug reporting number in vigiflow.

Case	Age (Years)	Weight (Kg)	Gender	Dose of Iohexol† ml/kg/iv
1.	1	8	Male	2
2.	2.5	10	Female	2
3.	10	26	Male	2

  

Provisional Diagnosis	Date of reaction	Outcome after treatment	Vigiflow Drug Report Number
Meningo-encephalitis	18/5/13	Recovered	2013-21622
Atypical febrile convulsion	20/5/13	Recovered	2013-19829
Seizure disorder	20/5/13	Recovered	2013-22205

†a radio-contrast agent.

The patients instantaneously developed seizure, fever, shivering & vomiting. They were immediately managed by Avil(Pheniramine), Inj. PCM(Paracetamol), Inj. Dexona (Dexamethasone), Cold sponging and Inj. Ondansetron. The patients recovered within a half hour. Looking at the frequency of occurrence of the side effects, all the three dyes were checked for expiry date and batch number and it was found that they all belonged to the same batch number 0203E1303 [Fig. 2].



Fig. 1 and 2.

## DISCUSSION

Three cases were admitted in the paediatric ward with the chief complains of fever, abnormal movements and vomiting. All the three cases were reported with Iohexol induced adverse drug reaction when undergoing screening for neurological disorders. In a controlled clinical trials involving 391 patients for paediatric angiocardiology, urography, and CECT head imaging, adverse reactions following the use of OMNIPAQUE 300 which contains Iohexol were generally less frequent than with adults and showed system wise the following adverse reactions viz. cardiovascular system: ventricular tachycardia (0.5%), 2:1 heart block (0.5%), hypertension (0.3%), and anaemia (0.3%); nervous system: pain (0.8%), fever (0.5%), taste abnormality (0.5%), and convulsion (0.3%); respiratory system: congestion (0.3%) and apnoea (0.3%); gastrointestinal system: nausea (1%), hypoglycemia (0.3%) and vomiting (2%) and skin and appendages: rash (0.3%) (Omnipaque, 2013). As per patient information leaflet (PIL) provided by the NIOSCAN (Iohexol) product manufacturer stated that the neurological reaction are very rare and they may include seizures or transient motor or sensory disturbances (Nioscan, 2013). In another study patients who had contrast medium induced seizure were reviewed retrospectively in a consecutive series of 15,226 contrast enhancement head CT examination having an incidence of 0.19% shows a strong association with history of spontaneous

seizure (Nelson *et al.*, 1989). Seeing such an incidence of Iohexol induced seizures, a role of pharmacovigilance becomes at the forefront to ensure the safety perspective of the every patients.

## CONCLUSION

Looking at the number of cases which we came to know of because of the ADRs collected by the undergraduate MBBS second year students who are being primed to take a responsible role to strengthen the Pharmacovigilance Programme (PvP); the importance of PvP can be well understood. On one hand, these cases were reported expedite to Indian Pharmacopeia Commission (IPC), The National Co-ordinating Centre of Pharmacovigilance in India, Ghaziabad, Uttar Pradesh by feeding the data in the vigiflow, an online software for database collection and the drug report number are given in Table 1. Iohexol induced seizure might be on an increase and thus entering each data in the vigiflow may give us the true incidence on the global scale. This information will make us more vigilant on the use of Iohexol and also readiness on the part of management of such ADRs. On the other hand, a practical approach was implemented in which the hospital administration was made aware of the increasing frequency of the ADR and chief pharmacist of the drug store was advised to stop the use of that particular batch thereby preventing further chances of Iohexol induced ADRs.

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