

# MYOCLONIC STATUS EPILEPSY SEEN SECONDARY TO IOHEXOL MYELOGRAPHY: A Case Report

Ali KURTSOY\*, Hidayet AKDEMİR\*, İ. Suat ÖKTEM\*, Ahmet MENKÜ\*,  
R. Kemal KOÇ\*, Vatan TAYFUR\*,

## ABSTRACT

Although it is accepted that iohexol is a contrast substance dissolving in water, it is also reported that some rare complications like headache, vomiting, confusion, tonic-clonic convulsions which are associated with the medicine are seen. Shortly after a 45 year-old-female patient who was admitted to Department of Neurosurgery of Erciyes University Medical Faculty for the examination and treatment of her low back and leg pain was given 10 ml. of 300 mg/ml iohexol (omnipaque) for lumbar myelography, the picture of myo-clonic status epilepsy developed. The patient was discharged from the hospital on day 15 on recovery from status epilepsy by intensive medical treatment. To our knowledge, only one case, which developed status epilepsy following myelography associated with iohexol, has been reported till now.

In this study, myo-clonic status which developed following iohexol lumbar myelography has been discussed together with the literature on the difficulties of epilepsy in treatment.

**Key words:** Contrast material, Iohexol, Lumbar myelography, Status epilepticus.

## ÖZET

### IOHEXOL MİYELOGRAFİYİ TAKİBEN GÖRÜLEN MİYOKLONİK STATUS EPİLEPSİ: Olgu Sunumu

Klinik çalışmalarda, iohexolun iyi tolere edilebilen suda eriyen kontrast madde olduğu kabul edilmesine rağmen, ilaca bağlı, baş ağrısı, kusma, konfüzyon ve tonik-klonik konvülsiyonlar gibi nadir komplikasyonlar görüldüğü de bildirilmektedir. Erciyes Üniversitesi Tıp Fakültesi Nöroşirürji Anabilim Dalı'na bel ve bacak ağrısı şikayetleri ile tetkik ve tedavi için yatırılan 45 yaşındaki bayan hastaya, 10 ml. 300 mg/ml iohexol (Omnipaque) lomber miyelografi için verildikten kısa bir süre sonra, miyo-klonik status epilepsi tablosu gelişti. Yoğun tıbbi tedavi ile status epilepsiden iyileşen hasta 15 gün sonra şifa ile taburcu edildi. Bilgilerimize göre literatürde, şimdiye kadar iohexole bağlı miyelografiyi takiben status epilepsi gelişen sadece bir vaka bildirilmiştir.

Bu çalışmada, iohexol lomber miyelografi sonrası gelişen miyo-klonik status epilepsisinin tedavideki güçlükleri ilgili literatür eşliğinde tartışılmıştır.

**Anahtar sözcükler:** Kontrast madde, Iohexol, Lomber miyelografi, Status epileptikus

## INTRODUCTION

Iohexol is a contrast material which can dissolve in second generation non-ionic water developed for myelography and angiography (6-8). In the studies done with iohexol, it has been reported that of the side effects associated with the medicine headache,

nausea, vomiting, confusion, psychological disorders, tonic-clonic convulsions and rarely status epilepsy was seen (1, 4, 16, 17)

## PRESENTATION OF THE CASE

45 year- old female patient was admitted into our clinic for the examination and treatment of her low

\* Erciyes University, School of Medicine, Department of Neurosurgery, Kayseri

back and leg pain. In the neurological examination on admission, she had 1-2/5 weakness in the dorsal flexion of great toe in the left foot, hypoesthesia in the left L 3, 4, 5 dermatomes, and neurogenic intermittent claudication. In magnetic resonance imaging, there was stenosis and spondilolysis at L4-5 and L5-S1 levels. 10 ml. of 300 mg/ml iohexol was given after 10 ml. of cerebrospinal liquid was drained by making a lumbar puncture at L2-3 level to take Myelo-BT to be able to explain the patient's clinical complaints. Fifteen minutes after myelography, the patient had respiration difficulty and myoclonic convulsions. The patient who was considered to have drug side effects was immediately given 100 mg. prednisolone, and 45 mg. Phenylamine hydrogene maleate (Avil) intravenously. Although 10 mg. of diazepam was given intravenously at 5 minute-intervals to prevent convulsions, diphenylhydantoin at a dose of 16 mg/kg was given in 30 minutes through infusion as a result of not being able to control the seizures of the patient. In spite of the treatment protocol above, when the seizures didn't stop, the patient was given phenobarbital at a dose of 5 mg/kg and general anesthesia was started considering that myoclonic status epilepsy developed. For this purpose, the patient who was intubated by giving sodium thiopental 5 mg/kg and 1mg/kg succinylcholine was attached to a ventilator. For the maintenance of general anesthesia, 2-5 mg/kg/hour sodium thiopental (according to EEG), and 2 mg/kg/ hour fentanyl infusion was performed. Maintenance of muscle relaxation was achieved by vecuronium bromide given at a speed of 6 mg/ hour after a dose of 0.005 mg/kg. bolus. As it was impossible to obtain EEG records during status epileptics, it was decided to wake the patient up when the convulsion activity disappeared in EEG taken when the patient was attached to a ventilator.

The patient who was extubated by stopping anaesthetic medicines at the end of day 4 and by performing decurarization with 1.2 mg. atropine and 2.5 mg. of neostigmine progressively regained his consciousness. The patient who was discharged from

the hospital on recovery on the 15<sup>th</sup> day of his admission into the hospital was only recommended to take diphenylhydantoin 400 mg/day.

#### DISCUSSION

Iohexol is a second generation contrast material which can be better tolerated compared to other myelographic agents when used intratecally and which is preferred due to its low neurotoxicity. Its molecular weight is 821 dalton, and 46.36 % of it is constituted by iodine (10). Following the myelographies done by iohexol, the incidence of such side effects as nausea, vomiting has been reported to be between 3 to 15 % (2, 9, 10). Early side effects occurring during or after lumbar myelography are studied in 3 groups as hyperexcitability, radicular and meningeal irritation. Kandet and Stevans (8) reported that clonic convulsions resulted from the contact with brain stem. Epileptogenic potential of iohexol was studied both as *invivo* and *invitro*. In a study carried out in monkeys, it was reported that convulsion developed after the lumbar injection of minimum dose of iohexol 975 mg/kg (2.5 ml x 370 mg/ml) (14).

Although 75 mg/kg intratecal iohexol we used in our case was less than 10% of minimum epileptogenic dosage, myoclonic status epilepsy may be associated with idiosyncrasy rather than with the dose effect.

Tonic-clonic status epilepsy is a neurological urgent case and requires intensive medical treatment. Clinical and experimental studies suggest that epilepsy attack should be stopped as soon as possible (12, 13). If the severity of convulsion attack is not allowed to last longer than an hour, permanent brain damage or death may be prevented. Mortality after tonic-clonic status epilepsy varies between 5 and 50 % in children and adults (3, 15). Some clinicians have reported that it was difficult to control tonic-clonic status seizures of long periods and in such cases mortality and morbidity were seen at higher rates (4). Nelson et al. (11) have reported that convulsion developed by intravenous contrast material were benign and 93 % of them lasted shorter than 5 minutes and 69 % of them recovered spontaneously.

Eldevik et al. (5) determined in the EEGs taken after iohexol was given intratecally that it didn't cause any spike activity. However, so far, only one case has been reported in literature that status epilepsy developed after iohexol myelography (16).

In our case in whom myoclonic status epilepsy couldn't be prevented by antiepileptics like diazepam, difenilhidantion and fenobarbital, convulsions could only be stopped by giving general anaesthesia. On the other hand, since in our patient's story there weren't such factors as chronic alcoholism, drug habits, or iodine allergy which predispose the patient to epilepsy, it is clear that myoclonic status epilepsy is caused by contrast material given intratecally.

Consequently, we are of the opinion that status epilepsy, which is rare but serious complication associated with iohexol used intatecally for myelography, may develop and general anesthesia has an important place in the medical treatment of such a picture.

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#### Corresponding Adress:

Ali KURTSOY  
Erciyes Üniversitesi, Tıp Fakültesi,  
Nöroşirürji Anabilim Dalı  
38039, Kayseri  
Tel : 0352 437 4574  
Fax: 0352 437 2934  
e-posta : kurtsoya@erciyes.edu.tr