

This work is licensed
under a Creative
Commons Attribution-
NonCommercial 3.0
Unported License.



To review this article online, scan this
QR code with your Smartphone



Toluene 2,4-Diisocyanate and Bowel Obstruction: Occupational Medicine Aspect of a Case Report

Dear Editor,

I read with interest the Case Report on intestinal obstruction due to acute toluene 2,4-diisocyanate (TDI) exposure recently published in *The IJOEM*.¹ Although considering occupational and environmental etiologies in the clinical assessment of the patient is admirable, some important clues of occupational history have not yet been clarified.

Characteristics of an exposure are very important: Was the exposure a work accident or an unexpected work task? Had the exposure happened in an outdoor area or indoors? Accidents usually result in a “big bang” phenomena and a massive exposure, whereas for a sponge production worker a chronic low level exposure to TDI with occasional peak exposures is more likely. Therefore, it seems that a massive exposure could better explain the clinical picture of this patient.

Some information about the worker's breathing zone measurement of TDI, pre-employment and periodical surveillances, usage and type of the patient's respirator and fitness for work after chemotherapy and the first surgery of this teenage worker could also be helpful. Recommendations about return to work of the patient after the second surgery are another important issue.

It is mentioned that “at follow-up visit

seven months later, he was completely fine.”¹ Did it happen while he was off work, on modified or changed work, or on the same work? You also mentioned in the Abstract that “TDI toxicity may cause intestinal obstruction”; in the Discussion, it is stated that “intestinal obstruction is an extraordinary manifestation of acute or chronic TDI toxicity” and that “TDI poisoning itself, may affect the intestinal smooth muscle and cause decreased bowel motility.”¹ None of these statements have references. Are these statements drawn from the current Case Report? Reference 6 of the article refers to a non-specific report of non-autonomic neuropathy following chronic exposure to a mixture of organic solvent and I believe it could hardly be applicable to the current patient.

According to the best of my knowledge, there is no evidence supporting bowel obstruction in acute or chronic TDI exposure in occupational medicine textbooks²⁻⁴ or reliable online sources.⁵⁻⁸ Nonetheless, gastrointestinal symptoms and respiratory obstructions are commonly reported among victims of TDI poisoning.²⁻⁸ Furthermore, a comprehensive Web search with *Google Scholar*, revealed no similar case reports (search terms: intestinal obstruction + toluene diisocyanate).

This Case Report reflects diagnostic and therapeutic challenges in occupation-

Received: Jul 17, 2013
Accepted: Jul 21, 2013
Online first: Jul 23,
2013

Cite this article as: Naseri Eshfahani AH. Toluene 2,4-diisocyanate and bowel obstruction: occupational medicine aspect of a case report. *Int J Occup Environ Med* 2013;**4**:218-220.

al medicine setting. In similar situations, consulting occupational medicine experts may be helpful.

Conflicts of Interest: None declared.

Financial Support: None

A H Naseri Esfahani, MD

occupationalmedicine@yahoo.com
Occupational Sleep Research Center (OSRC), Tehran
University of Medical Sciences, Tehran, Iran

References

1. Shadnia S, Ahmadimanesh M, Ghazi-Khansari M, Zamani N. Intestinal obstruction in acute inhalational toluene 2,4-diisocyanate gas toxicity. *Int J Occup Environ Med* 2013;**4**:164-6.
2. LaDou J. *Current Occupational & Environmental Medicine*. 4th ed. New York, McGraw Hill; **2007**.
3. Rosenstock L, Cullen MR, Brodtkin CA, Redlich CA. *Textbook of Clinical Occupational and Environmental Medicine*. 2nd ed. Philadelphia, Elsevier Saunders, **2005**.
4. Rom WN. *Environmental and Occupational Medicine*. 4th ed. Philadelphia, Lippincott Williams & Wilkins, **2007**.
5. CDC. NIOSH Pocket Guide to Chemical Hazards. 2013, Available from www.cdc.gov/niosh/npg/npgd0621.html (Accessed July 18, 2013).
6. CDC. NIOSH. Benzene, 2,4-diisocyanato-1-methyl. Updated May 2009. Available from www.cdc.gov/niosh-rtecs/cz602160.html (Accessed July 18, 2013).
7. United State Department of Labor. OSHA Toluene-2,4-diisocyanate (TDI). Available from www.osha.gov/dts/chemicalsampling/data/CH_272400.html (Accessed July 18, 2013).
8. United States Environmental Protection Agency (EPA). 2,4-toluene diisocyanate. Updated January 2000. Available from www.epa.gov/ttn/atw/hlthef/toluene2.html (Accessed July 18, 2013).

Authors' Reply

Dear Editor,

The comments of Dr. Naseri Esfahani were well received. The exposure to 2,4-diisocyanate (TDI) gas was a work accident. The patient had been working in the same work position since 18 months earlier, from the very beginning of his work. The exposure had happened indoors. Although the patient had been doing the same task in the same area for almost 18 months, on the time of accident, he was exposed to a massive amount of TDI after a break in the gas tank, as it was fully described in our Report.¹

When the patient was brought to our center, we did not have access to an occupational medicine expert. He was rather illiterate and did not cooperate in providing relevant data. We did also not know anything about the stuff on his respirator and fitness for work after his chemotherapy. He only mentioned that he had been checked up every six months on a work schedule and annually by his own physician for his lymphoma. As a matter of fact, since we had no occupational medicine specialist in our center, we advised him to refer to a physician in his workplace for receiving advice on return to work. Nonetheless, that was not related to the management of his acute toxicity, which was our job.

Seven months later, the patient was still at the same work. On follow-up call, he mentioned he had returned to work about 10 days after discharging from the hospital, and has completely been symptom-free.

In the "Discussion" section of our Case Report, we mentioned intestinal obstruction due to TDI as an extraordinary presentation; obviously, this statement had no reference as it was drawn from our observations. As mentioned previously, we

could not find any report on intestinal obstruction following TDI exposure and that was exactly why we presented our patient as a Case Report. If there is really any correlation between intestinal obstruction and TDI exposure, we are not still aware of the exact mechanism; however, we tried to consider every possible mechanism for such association and therefore, cited reference 6.

Conflicts of Interest: None declared.

N Zamani, MD

nasim.zamani@gmail.com
Toxicological Research Center, Clinical Toxicology
Department, Loghman Hakim Hospital Poison Center,
Faculty of Medicine, Shahid Beheshti University of Medical
Sciences, Tehran, Iran

References

1. Shadnia S, Ahmadimanesh M, Ghazi-Khansari M, Zamani N. Intestinal obstruction in acute inhalational toluene 2,4-diisocyanate gas toxicity. *Int J Occup Environ Med* 2013;4:164-6.

Guidelines for Filing a Competing Interest Statement

Definition: Conflict of interest (COI) exists when there is a divergence between an individual's private interests (competing interests) and his or her responsibilities to scientific and publishing activities such that a reasonable observer might wonder if the individual's behavior or judgment was motivated by considerations of his or her competing interests. COI in medical publishing affects everyone with a stake in research integrity including journals, research/academic institutions, funding agencies, the popular media, and the public.

COI may exist in numerous forms including financial ties, academic commitments, personal relationships, political or religious beliefs, and institutional affiliations. In managing COI, *The IJOEM* abides to the policy statement of the *World Association of Medical Editors (WAME)*. All authors should declare their COI, if any, during the manuscript submission. Reviewers are asked to declare their COI after they accept to review a manuscript. Editors should also declare their COI during handling of a manuscript.

Managing COI depends on disclosure because it is not possible to routinely monitor or investigate whether competing interests are present. COI disclosed by authors will be presented in the Editorial Board and an appropriate action will be taken. Those reviewers and Editors with COI will be excluded from the manuscript process. If competing interests surface from other sources after a manuscript is submitted or published, *The IJOEM* investigates allegations of COI and depending on their nature, appropriate actions will be taken if the allegations were found to be true. If a manuscript has been published and COI surfaces later, the journal will publish the results of the investigation as a correction to the article and ask the author to explain, in a published letter, why the COI was not revealed earlier.