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Headache caused by handling the pesticide Antracol Combi WP 76: a case report

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Abstract We report on headache caused by the pesticide Antracol Combi WP 76. A headache caused by handling of pesticides should be distinguishable from migraine and headaches from other causes. This 29-year-old woman, who handled pesticides, presented with very strong headache with nausea and vomiting. Poisoning by this pesticide cannot be proven toxicologically, and there is no antidote. Following isolation from the pesticide and abundant hydration, the pain gradually decreased. History, clinical signs and neuroradiological examinations excluded other possible causes of the headache. In treatment of patients in rural areas, attention should also be paid to the pesticide Antracol Combi WP 76 as a possible cause of headaches

Keywords Headache · Pesticide · Antracol Combi WP 76

Introduction

Pesticides have been widely used in developing countries over the years. A large amount of these remains in the environment and organisms. Pesticide pollution is detrimental to human

health. The effects can be seen on a short- or a long-term basis and the symptoms can vary from headache to cancer. Pesticides can cause gene mutations and chromosomal aberration in exposed individuals [1–5]. The primary targets of toxicity are the haematopoietic system (serum cholinesterase inhibition), the cardiovascular system (cardiovascular lesions,

abnormalities in heart rate and increase in heart-to-body ratio, tachycardia, tachypnoea, sinus bradycardia, depression of ST segments with T-wave inversion, elevated blood pressure), the reproductive system (placental morphology, fibrosis and haemorrhage, and inhibition of DNA synthesis in seminiferous tubules) and the nervous system (headache, muscle weakness, insomnia, dizziness, impaired memory, miosis, fasciculation, neuralgia) [6–9]. Some patients poisoned with pesticides complain of vague symptoms such as headache, dizziness, fatigue, nausea, vomiting, abdominal pain, myalgia, flu-like symptoms, etc. [10]. Occurrence of a single symptom, such as headache and/or nausea with vomiting requires a comprehensive differential diagnostic treatment, based upon detailed anamnestic information as well as laboratory tests and neuroradiological examinations, aiming to establish the cause of the headache with certainty.

Case report

A 29-year-old woman was hospitalised in the emergency ward for intensive headache and vomiting. Until then she had been in fine health and had not suffered from migraine or other headaches. Two days before hospital admittance, she had performed some agricultural jobs, including application of a pesticide - Antracol Combi WP 76 (Bayer CropScience). The headache gradually intensified and nausea and vomiting appeared. The headache was pulsating, in the frontal part of the head, with photo- and phonophobia, nausea and vomiting. The pain intensity on the Visual Analogic Scale (VAS) was 10. Lowered blood pressure was noticed (RR 110/60 mmHg). Neurological status was normal; there were no signs of meninges excitation. Blood and urine laboratory tests, electrocardiograph (ECG) and computed tomography (CT), electroencephalography (EEG) and transcranial Doppler (TCD) were performed. Complete blood cell count, urinalysis and blood chemistry as routine tests and ECG were normal. CT of the brain showed no focal pathomorphological changes. The EEG was mildly disrhythmic, with no focal paroxysmal changes. The TCD showed accelerated flow in the blood vessels of the brain consistent with vasospasm. The patient was administered a glucose infusion solution of 5% and 0.9% of NaCl, over two days, avoiding food and analgesics. The headache gradually decreased, on the second day, to 6.5 on the VAS. On the third day the pain was 2–3 on the VAS, and on the fourth day the patient had no more headache. The patient's general status was perfectly normal. A control CT of the brain was done, which showed no pathomorphological changes. The sulci ratio was adequate. EEG and TCD were normal.

Antracol Combi WP 76 contains propineb (a polymer of

zinc propylene bis dithiocarbamate), cymoxanil (1-(2-cyano-2-methoxyiminoacetyl)-3-ethylurea) and alkyl aryl sulphonate. This poisoning could not have been examined toxicologically. This pesticide is harmful to human, and poisonous for fishes and domestic animals. Croatia's Poisons Act classifies it as a Group III poison. There is no specific antidote, and therapy is symptomatic. The reported side effects in cases of poisoning with this pesticide (according to the producer's data sheet) are possible fatigue, headache, thirst, sweating and vomiting.

Discussion

Our patient had no history of migraine or other headaches, and the pain appearance timing was related to handling of pesticides. As the anamnestic and applied diagnostic methods excluded other possible causes of headache accompanied with nausea and vomiting, and the patient had been exposed to pesticides, we may conclude that the headache was caused by exposure to pesticides. There is no biochemical test to prove any elevated levels of the pesticide's ingredients in blood, urine, heart, etc. There is no adequate antidote for this pesticide, meaning only symptomatic therapy can be applied. Isolation from the agent, with adequate hydration, finally produced favourable results. We performed a systematic review of peer-reviewed publications identified through the MEDLINE databases (searched to May 2007). The search term was *headache and pesticide*, and the search was limited to clinical trials and articles in English. The search was extended by a review of bibliographies from pertinent original reports of data and review articles. Headache is a common side effect in cases of poisoning with pesticides, accompanied with other side effects [7, 10–18]. The side effects suffered by our patient were limited to headache with nausea and vomiting. The patient had no history of headaches that would indicate a possible migraine, whereas the diagnostic treatment indicated no other possible causes of the headache.

Thus, improper handling of pesticides, with inadequate measures of protection, is the only possible cause of such an intensive headache. Following a period of isolation of the patient from the agent, with abundant hydration, the headache gradually and completely disappeared over three days, until a complete recovery on the fourth day of hospitalisation, with all the neurological indicators being normal. The brain oedema identified by CT in the acute stage of the headache gradually disappeared with disappearance of the headache. No residual changes of the brain tissue were registered, which indicates that vascular processes most probably caused the headache. No headache similar to the clinical

image of migraine and caused by the agent Antracol Combi WP 76 (propineb/cymoxanil) has been described. Therefore, migraine should be distinguishable from headaches caused by Antracol Combi WP 76 pesticide poisoning. Assessment of type of headache requires a high-quality and comprehensive medical history study, supported by diagnostic methods. In rural areas, where pesticides are being used, particular

attention should be paid to possible side effects that cause numerous neurological symptoms, particularly headaches. A proper assessment of the cause is necessary for adequate treatment of the patient.

Education of the users of pesticides and the community in general is essential to create an awareness of the toxicity of these agents and to reduce morbidity.

References

- Ramírez V, Cuenca P (2001) Micronuclei frequency in lymphocytes of individuals occupationally exposed to pesticides. *Rev Biol Trop* 49:1–8
- Eysseric H, Vincent F, Peoc'h M et al (2000) A fatal case of chlorate poisoning: confirmation by ion chromatography of body fluids. *J Forensic Sci* 45:474–477
- Coutinho DA, Dreyer G, Medeiros Z et al (1994) Ivermectin treatment of bancroftian filariasis in Recife, Brazil. *Am J Trop Med Hyg* 50:339–348
- Pani SP, Reddy GS, Vanamail P et al (2004) Tolerability and efficacy of single dose diethylcarbamazine (DEC) alone or co-administration with Ivermectin in the clearance of *Wuchereria bancrofti* microfilariemia in Pondicherry, South India. *J Commun Dis* 36:240–250
- Bréga SM, Vassilieff I, Almeida A et al (1998) Clinical, cytogenetic and toxicological studies in rural workers exposed to pesticides in Botucatu, São Paulo, Brazil. *Cad Saude Publica* 14:109–115
- Edwards FL, Tchounwou PB (2005) Environmental Toxicology and Health Effects Associated with Methyl Parathion Exposure – A Scientific Review. *Int J Environ Res Public Health* 2:430–441
- Satar S, Satar S, Sebe A et al (2005) Carbofuran poisoning among farm workers. *Mt Sinai J Med* 72:389–392
- Neuberger M, Kundi M, Jäger R (1998) Chloracne and morbidity after dioxin exposure (preliminary results). *Toxicol Lett* 96-97:347–350
- Delgado IF, Paumgarten FJ (2004) Pesticide use and poisoning among farmers from the county of Paty do Alferes, Rio de Janeiro, Brazil. *Cad Saude Publica* 20:180–186
- Shenoy RK, George LM, John A et al (1998) Treatment of microfilariemia in asymptomatic brugian filariasis: the efficacy and safety of ivermectin and diethylcarbamazine. *Ann Trop Med Parasitol* 92:579–585
- London L, Nell V, Thompson ML et al (1998) Effects of long-term organophosphate exposures on neurological symptoms, vibration sense and tremor among South African farm workers. *Scand J Work Environ Health* 24:18–29
- Youssef FG, Hassanein SH, Abded-Fatah MS et al (1997) Effect of two single doses of ivermectin in treatment of asymptomatic bancroftian filariasis in two villages in the Nile Delta, Egypt. *J Egypt Soc Parasitol* 27:83–92
- Acuna MC, Díaz V, Tapia R et al (1997) Assessment of neurotoxic effects of methyl bromide in exposed workers. *Rev Med Chil* 125:36–42
- Ferraz HB, Bertolucci PH, Pereira JS et al (1988) Chronic exposure to the fungicide maneb may produce symptoms and signs of CNS manganese intoxication. *Neurology* 38:550–553
- Agarwal SB (1993) A clinical, biochemical, neurobehavioral, and sociopsychological study of 190 patients admitted to hospital as a result of acute organophosphorus poisoning. *Environ Res* 62:63–70
- Neuberger M, Rappe C, Bergek S et al (1999) Persistent health effects of dioxin contamination in herbicide production. *Environ Res* 81:206–214
- Gomes J, Lloyd O, Revitt MD et al (1998) Morbidity among farm workers in a desert country in relation to long-term exposure to pesticides. *Scand J Work Environ Health* 24:213–219
- Leveridge YR (1998) Pesticide poisoning in Costa Rica during 1996. *Vet Hum Toxicol* 40:42–44