Patient intoxicated with benzodiazepines, case report

V.Ognjanova, B.Kuzmanovska, A.Kartalov, M. Toleska

¹University Clinic for traumatology, orthopedics, anesthesia, resuscitation and intensive care and emergency center, Skopje, R.Macedonia

Introduction: Benzodiazepines are sedative-hypnotic agents, used for sedation and to treat anxiety, seizures, withdrawal states, insomnia, and drug-associated agitation. They are frequently combined with other medications for procedural sedation. The high incidence of BZD overdose mirrors their widespread use and availability. Benzodiazepines act as positive allosteric modulators on the gamma amino butyric acid (GABA)-A receptor.

Case presentation: A comatose, apneic patient was presented in the emergency department, patient's pupils were myopic and symmetrical, vital signs: TA 160/100, HR 45, GCS= 5. The patient was intubated, was administered atropine in two doses: 0.5mg and a second dose 0.5 mg, and a CT scan was performed on the patient's head, thorax and abdomen after which he was transferred to the Intense Care Unit (ICU), and set on a mechanical ventilation on BIPAP FiO₂=50%, PEEP=5. His vital parameters were TA 160/100, HR 100, SpO₂ 98%. The patient's family reports that the patient lost consciousness and had excessive "foamy mucus" in his mouth. Furthermore, they report that the patient does not take any medication and negate any medical history of addiction issues.

Discussion: As with any overdose, the first step is to assess the patient's airway, breathing, and circulation and to address these rapidly as needed. The cornerstone of treatment in benzodiazepine overdoses is good supportive care and monitoring. Patients may be discharged if they remain asymptomatic at least 6 hours post ingestion. Those with mild toxicity may be observed in the emergency department until they recover. Patients with intentional overdoses require psychiatric evaluation before discharge. Patients with hemodynamic instability, coma, or respiratory depression are admitted to the intensive care unit (ICU). Respiratory depression may be treated with assisted ventilation.

Learning points: In acute drug poisoning, a high index of clinical suspicion and an early and prompt intensive medical therapy could improve the patient outcome.

Management and Outcome: The patient was admitted in the ICU and symptomatic treatment was initiated. He was sedated with Fentanyl 30mg/Midazolam 100mg/3 ml/h, and because of the bradycardia (up to 40 beats/min) Atropin 0.5 mg was administered several times. The laboratory report showed elevated Leu 43.8, Glu 28.9, ALT 77, AST 76, Amy 206, LDH 531, Na 135, K3.5 CRP2.4. The patient was given Actrapid 16IE, 2000 ml fluids, and the acid-base status was assessed. The acid-base status showed pH 7.239, pCO₂ 3.92, pO₂ 30.96, HCO₃ 12.7, BE_{ecf} -14.9, and consequently the patient was given NaHCO₃ 40ml. After 3 hours, the acid-base status was re-examined, reading: pH 7.296; pCO₂ 32.62, HCO₃ 17.5; BE_{ecf} -9.2. The CT scans showed no abnormal findings. The toxicological measurements in the patient's serum showed positive findings on benzodiazepines, 856ng/ml or 4 times higher than normal values. The sedation was discontinued, and after 5 hours, the patient was awake and contactable, extubated and supported by oxygen mask. The blood parameters were improving with a tendency of drop of Leu 19.8, stabilized glucose levels to 4.6, ALT 58; AST 42, LDH 280; Na143; and K 4.7. The acid-base status was improved, pH 7.33. After 3 days hospitalization in the ICU, the patient was transferred in the toxicology department.

"overdosage of benzodiazepines is usually manifested by varying degrees of central nervous system depression ranging from drowsiness to coma."

- Food and Drug Administration

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