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## Patient with depression poisoned with psychopharmaceutics and ethanol – case report

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### Abstract:

In Poland in 2016, there were almost 10,000 suicide attempts, in which about 55% ended up with death. Suicidal attempts are more often taken by women, but they are more effective in the case of men. Most of these people are afflicted with mental illness such as depression.

A 49 year old man was admitted to Cardiology and Toxicology Department, because of poisoning with antipsychotic drugs and ethanol. It was his second suicide attempt. The day he was admitted to the hospital he was in serious condition. Patient was monitored, symptomatic treatment and pharmacotherapy were initiated. The patient required intubation and the use of respiratory therapy because of breathing problems. In the clinical study and imaging examinations massive pneumonia, was confirmed. His pharmacotherapy was modified and the antibiotics were given because of inflammation of a lungs.

For patients poisoned by various substances, respiratory failure often has a complex medium. It may result from the depression itself of the xenobiotics on the respiratory system, the influence of the indirect mechanism of breathing or the result of aspiration and development of pneumonia. In therapy the most important is the monitoring of the patient's

condition, electrolyte imbalance and symptomatic treatment. In a few cases and only for some drugs, we can use a specific antidote.

**Key words:** poisoning, depression, ethanol, antipsychotics, respiratory failure

### **Introduction:**

In Poland in 2016, there were almost 10,000 suicide attempts, in which about 55% ended up with death. There were 55,8% suicides committed by men. Suicidal attempts are more often taken by women, but they are more effective in the case of men. For most of the people the main reason was mental illness (28,7%) [1].

Depressive disorders are a group of disorders with a predominant symptom of a subjectively felt mood depression [2]. Typical symptoms of depression are anxiety, loss of interests, decreased concentration, indecisiveness or feeling guilty. According to WHO, over 300 millions of people on Earth suffer from this condition. Mostly women. It is necessary to start psychotherapy or pharmacotherapy in order to treat depression. Less than half of the people with depression receive treatment [3].

### **Case Report:**

On November 2018, a 49 year old man, was admitted to Cardiology and Toxicology Department, because of drugs poisoning. He was treated for depression for a few years. Man was found in his apartment unconscious, there were empty packages of drugs next to him – quetiapine (25mg, 90 tablets), alprazolam (0,5mg, 30 tablets), mianserin (30mg, 60 tablets), temazepam (10mg, 20 tablets), tramadol (50mg, 20 tablets), trazodone (75mg, 15 tablets). The day he was admitted to the hospital, he was in serious condition, without reactions to pain stimuli, cardiovascular and respiratory efficient, without external injuries. Man had narrow, equal pupils. The patient was monitored, symptomatic treatment and pharmacotherapy were initiated – solutions of mineral salts, dexamethasone, fraxiparin and omeprazole.

Compound's name	Blood concentration
Benzodiazepines	481,99 ng/ml (poisoning from 300 ng/ml)
Tricyclic Antidepressants	123, 18 ng/ml (poisoning from 300 ng/ml)
Valproate	<1 (norm 50-100 ug/ml)
Carbamazepine	< 0,5 ug/ml (norm 4-12 ug/ml)
Ethanol	0,75 g/l

Figure 1: Concentration of the compounds in blood the day patient was admitted to the hospital

The patient admitted to taking drugs in order to commit a suicide. It was his second suicide attempt, three months ago he tried to hang on. Man has not been drinking alcohol for six months. The man decided to additionally reach for alcohol to intensify drug poisoning, which is reflected in the toxicological studies of the patient. As a reason for this suicidal act was worsening of a mood and family problems. The contact with patient was difficult, superficial with silent speech. Patient was in pale affect, unmodulated, he confirmed the existence of suicidal thoughts.

The results of toxicological tests do not reflect the condition and severity of the poisoning. Temazepam is the only drug whose concentration can be deduced from toxicological studies. The other medicines are not determined and they were also responsible for the patient's condition.

After transient improvement, the patient's condition deteriorated. On the second day of hospitalization, the patient was diagnosed with breathing problems. The patient required intubation and the use of respiratory therapy. In the clinical study and imaging examinations (X-rays), massive pneumonia, probably aspiration, was confirmed. Aspiration occurred at the time of intoxication when the patient was unconscious. His pharmacotherapy was modified and the antibiotics were given because of inflammation of a lungs. Patient was on respiratory breath for five days. After the treatment was started, the patient's condition improved.

During the stay at the Department, the patient was examined psychologically and psychiatrically.

After 10 days of hospitalisation in the Toxicology Department, he was directed to Neuropsychiatric Clinic for further treatment of his depression.

## **Discussion:**

Every year, approximately 1,200 patients are hospitalized in the Clinical Toxicology and Cardiology Department in Lublin, of which nearly half are patients poisoned by drugs. About 21% of patients in particular years are patients who are poisoned with antipsychotics or sedatives. They are the largest group of our patients. The most common poisonings concern patients treated psychiatrically, and overuse of drugs are usually permanently used by these patients.

Benzodiazepines are one of the most commonly used psychiatric drugs [4]. The main symptoms of taking those pharmaceuticals in overdose are tachycardia, impaired reflexes, hypotension, drowsiness, impaired consciousness, blurred speech and respiratory center retardation [5]. Respiratory depression is more common especially when taking benzodiazepines with anti-depression drugs and alcohol. We can observe that in our patient's case, man needed intubation in his second day of hospitalisation. Benzodiazepines poisoning can be treated with flumazenil, which is this group of pharmaceuticals antagonist. But we can't use flumazenil, if patient also used antidepressants, because it increases the risk of cardiac arrhythmias [6]. That's why other pharmaceuticals were used to improve the condition of our patient.

Ethanol poisoning may appear as coma, respiratory disorders, heart arrhythmia or lowering blood pressure. The severity of symptoms depends on sex and body weight. Poisoning is treated by intravenous fluids, electrolytes, vitamins and glucose. In some cases, naloxone may also be given. In poisoning, depression of the respiratory center is often observed and endotracheal intubation may be necessary.

Medicines used by the patient act synergistically and can mutually reinforce their effects. In addition, alcohol consumed by the patient may exacerbate the adverse effects of these drugs. Patient intubation and respiratory failure were a result of a complex mechanism, a depressive effect of drugs on the respiratory center, a multitude of drugs but probably also a developing massive aspiration pneumonia.

In therapy the most important is the monitoring of the patient's condition, electrolyte imbalance and symptomatic treatment. In a few cases and only for some drugs, we can use a specific antidote such as flumazenil in benzodiazepine poisoning. These antidotes are rarely used, they work shortly and do not absolve us from symptomatic and non-specific treatment.

## **Conclusions:**

- It is necessary to quickly diagnose and treat depression in order to prevent suicide attempts
- Overdose of benzodiazepines may lead to respiratory failure
- We can't treat benzodiazepines poisoning with flumazenil, if there were also antidepressant used
- Poisoning with different antipsychotic drugs and ethanol can be particularly dangerous, because these substances act synergistically and they support their harmful effects

- Patient with antipsychotic poisoning should be monitored, especially for cardiovascular and respiratory disorders

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