

# Psychotic and Anatomical Defects of Choking: Case Report

## Psikotik ve Anatomik Bozukluğu Olan Tıkanma Olgusu

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**ABSTRACT** Death caused by choking occurs when food or foreign bodies block the respiratory tract. This study aims reporting a death case of a 62-year-old schizophrenic woman who died after a piece of meat blocked her airways. We found out during the autopsy that meat which was found in oesophagus blocked larynx completely. Furthermore, it was observed that cervical hyperostosis (involving 5<sup>th</sup> cervical vertebrae) narrowed upper oesophagus. Antipsychotic medications were detected in the toxicological analyses of blood and bile. This study was aimed to indicate that choking is caused not only by psychotic reasons but also by antipsychotic medications and cervical pathology. Moreover, these risk factors' causing death was also discussed with literature in this study.

**Key Words:** Airway obstruction; schizophrenia; death, sudden; drug effects

**ÖZET** Tıkanma sonucu meydana gelen ölüm yabancı cisim veya gıda parçalarının hava yollarını tıkamaması sonucu oluşmaktadır. Bu çalışmada 62 yaşında şizofreni hastası kadının büyük bir et parçasının hava yollarını tıkamaması sonucu ölüm vakası rapor edilmiştir. Otopsi sırasında özofagus girişinde kalan büyük bir et parçası larinks hava yolu girişini tamamen tıkamış bir şekilde bulunmuştur. Aynı zamanda servikal 5. vertebrada (C5) bulunan hiperosteotik formasyonun özofagus girişini daralttığı izlenmiştir. Kan ve safranin toksikolojik analizlerinde antipsikotikler grubunda bulunan ilaçlar tespit edilmiştir. Tıkanmanın sadece psikiyatrik etkilerden değil antipsikotik ilaç kullanımından ve servikal patolojilerden de kaynaklanabildiği, bu risk faktörlerinin ölüme katkıları literatür eşliğinde tartışmayı amaçladık.

**Anahtar Kelimeler:** Havayolu tıkanıklığı; şizofreni; ölüm, ani; ilaç etkileri

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Death caused by choking occurs when food or foreign bodies block the respiratory tract. In the autopsy of choking cases, diagnosis is made through detecting a foreign body in the airways or determining the findings of asphyxia. If any specific reasons of death cannot be determined during the autopsy, the possibility of choking is taken into account. There are a lot of risk factors that cause choking. These wide range risk factors are swallowing large amounts of food, decayed or missing teeth, consumption of alcoholic beverages, cerebrovascular diseases, dementia, Parkinson's disease, schizophrenia, taking sedative or antipsychotic drugs.<sup>1</sup> It is indicated that people diagnosed with mental illnesses are 8-20 times more likely to choke than the other people, and antipsychotic drugs which are taken by people with mental illnesses increase the risk of choking.<sup>2,3</sup> In this study, a case of a woman who was schizophrenic

and used to take antipsychotic drugs and her cause of death (choking by a piece of meat) was presented.

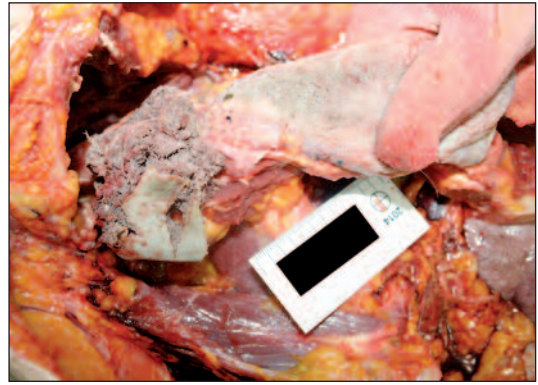
## CASE REPORT

### CASE HISTORY

The case is a 62 year-old schizophrenic woman who used to live with her sister and her sister's husband. She would take the necessary drugs regularly. She used to smoke a packet of cigarette a day and she didn't use to drink alcoholic beverages. It is learned that she didn't have any other illnesses except for schizophrenia. It was reported that she used to eat very fast and swallow large pieces of food at a time. She also used to eat inclining her head. On the day of the event, her sister and her sister's husband went out to swim in the sea and she stayed at home. They found her lying face down and thought that something escaped into her throat and got stuck there as it had happened one year before. They checked her mouth; however, they couldn't see anything. Emergency medical personnel arrived at the scene and they stated that she had died. Crime scene investigation revealed that there was cooked spleen on the stove.

### AUTOPSY FINDINGS

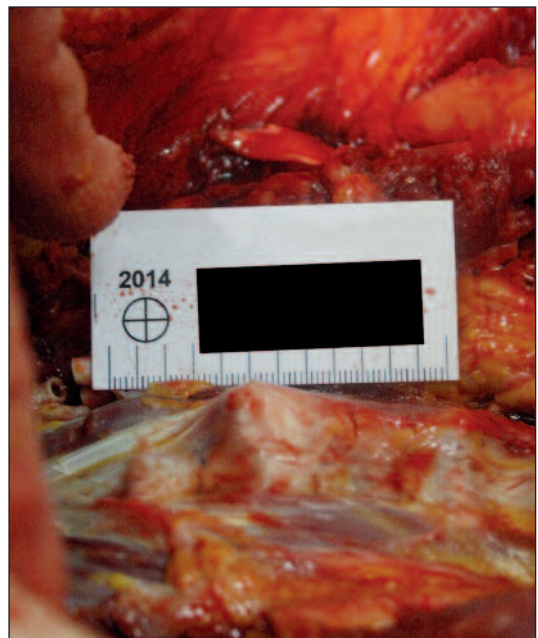
In the external visual examination, lividity was seen in the head and neck area. It was also detected that she had no missing teeth. In the autopsy, it was observed that the brain was oedematous and petechial haemorrhage was monitored in white matter. There wasn't presence of pathology in the heart. Both lungs was adherent to the chest wall and oedema and petechial haemorrhage was monitored on the surface of the lungs. 8x5x2.5 cm semi-cooked meat with tooth marks on it which blocked larynx completely was found in laryngo-oesophageal cleft through oropharynx and oesophagus (Figure 1, 2). It was monitored that meat blocked the airway completely. 600 ml meat the biggest of which was 1 cm<sup>3</sup> not chewed meat was found in the stomach. 1 cm cervical hyperostosis was observed in the anterior cervical vertebra (5<sup>th</sup> cervical vertebrae) (Figure 3). Pathology was not detected in other organs.



**FIGURE 1:** Semi-cooked meat which blocked larynx completely in laryngo-oesophageal cleft through oropharynx and oesophagus



**FIGURE 2:** Semi-cooked meat with tooth marks on it.



**FIGURE 3:** Cervical hyperostosis in the anterior cervical vertebra (5<sup>th</sup> cervical vertebrae).

## HISTOPATHOLOGICAL FINDINGS

Oedema, intra-alveolar haemorrhage, severe hyperaemia, hypertrophy in myocardial tissue, perivascular and interstitial fibrosis and focal scar were detected in lung tissue. Pathology was not detected in other organs. A sample of meat which was taken from supraglottic region was found compatible with animal spleen tissue.

## TOXICOLOGICAL ANALYSIS

In systematic toxicological analysis, therapeutic level of Amisulpride, Quetiapine, Risperidone were detected in the blood and Amisulpride was detected in the gallbladder.

## DISCUSSION

Asphyxia caused by food is accepted as sudden death caused by an accident.<sup>4,5</sup> A kind of a sudden death which is named as cafe coronary occurs when upper airways are obstructed during eating. Later, less common types like coprophagic cafe coronary and the treatment of cafe coronary were presented in the literature.<sup>6,7</sup>

Sudden death which occurs when upper airways are obstructed during eating has become a matter of debate. In these cases, death is caused by food's blocking the airway completely; however, when food does not obstruct the airway completely and if the findings are not clear to find the cause of the death, it is appropriate to explain the cause of the death with cardiac arrest caused by superior laryngeal nerve stimulation and vagus nerve inhibition. Furthermore, trying to swallow the food and screaming make it easy to obstruct the airway.<sup>7-10</sup> Food could also be in oesophagus and apply an external pressure on the trachea. In the case which is presented in this study, food that caused an obstruction in upper airways is compatible with stomach contents and 1 cm anterior cervical hyperostosis in the 5<sup>th</sup> cervical vertebra caused the food not to pass through oesophagus and not to be swallowed. It was found out that swallowing reflex and inspiration's negative pressure lead the larynx airway to get obstructed completely. Not only these findings, but also macroscopic and pathologic findings in lung tis-

sue showed that death was caused by fatal asphyxia resulted from the mentioned mechanism and larynx obstruction.

Choking cases are mostly as follows: old people, people who has missing teeth or dental prosthesis, people who drink alcoholic beverages, people with physical and mental disorders and people who take sedatives or antipsychotic drugs.<sup>11</sup> In their study, Berzlanovich et al. reported that asphyxia cases after eating meal occur mostly when the case is old, his/her alcohol level is high or when he or she has orthodontics problems.<sup>12</sup> In this presented case, the age of the person is compatible with the literature; however, alcohol consumption and dental problems are incompatible.

Mental and psychiatric disorders and/or sedative-antipsychotic drugs increase the risk of asphyxia after eating. It is known that schizophrenia and antipsychotic drugs increase the risk of choking after meals as it is the case in this study. Hwang et al. reported in their study in 2010 that mental disorders increase choking after meals and Mortensen and Juel stated that mortality of schizophrenic people has increased considerably due to choking.<sup>2,13</sup> Schizophrenic patient are susceptible to choking due to deglutition disorders, dysphagia, tachyphasia, chronic neurological disease like comorbid.<sup>4</sup> These patients cannot determine the amount of food to swallow and they tend to swallow the food without chewing it. Furthermore, adverse effects of the antipsychotic drugs that they take, dopamine, swallowing problems controlled by central and peripheral system, difficulty of controlling faucial reflex, pharyngeal/laryngeal dystonia, tardive dyskinesia and/or anticholinergic lead to xerostomia, oesophageal motility and choking which is also caused by schizophrenia.<sup>14</sup> These adverse effects can be a potential fatal complication of antipsychotic drugs. In the case which is the focus of this study, the cases' being schizophrenic for twenty years, the drugs which she used to take regularly (confirmed by her relatives), her experiencing a swallowing problem a year ago, antipsychotics like amisulprid, risperidon, quetiapine detected in toxicological analysis which may cause dysphagia because

of their dopaminergic and anticholinergic effects have played a role in dysphagia and choking etiology. Polyphagia and binge eating disorder are very common in schizophrenic patients. Her disability to analyse the facts and evaluate them might cause her not to decide for the correct amount of food to swallow. For this reason, she might try to swallow a large piece of meat. This factor as well as swallowing food without chewing might lead to asphyxiation caused by food.

In this case, anterior cervical hyperostosis (5<sup>th</sup> cervical vertebrae) was detected. Nevertheless, diagnosis of the formation wasn't established. It is stated in the articles published in literature that the formation mentioned above leads to choking.<sup>15</sup> Dysphagia is generally linked to cervical hyperostosis in 4<sup>th</sup> and 5<sup>th</sup> cervical vertebrae.<sup>16</sup> The case presented in this study is compatible with the literature. In their study which is conducted by video fluoroscopy, Strasser et al. states that osteophyte size (>10 mm) have corre-

lation with the rate of aspiration.<sup>17</sup> Therefore, the cases' having cervical hyperostosis in 5<sup>th</sup> cervical vertebrae is 1 cm and it is one of the reasons that causes choking.

As a result, predisposing factors that cause choking and the effects of these factors on the mechanism of death are presented in this study. Sudden collapse during eating should bring choking to mind. It is recommended to take detailed clinical history, to check if resuscitation has been conducted or not, to learn whether food has been taken out before the autopsy and to examine oropharynx, teeth, airway, upper gastrointestinal and stomach, to examine the brain and cervical structure in a detailed way and to do toxicological analysis during the autopsy. Moreover, psychiatrists should take into account the fact that dysphagia could develop when schizophrenic people takes antipsychotic drugs. Patients and patient's relatives should be informed about this adverse effect and multidisciplinary methods should be adopted.

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