

## ALCOHOL DEPENDENCE IN A PATIENT WITH BRAIN TUMOR

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**SUMMARY** – Alcoholism is accompanied by many physical, neurological, psychical and social complications. Relevant literature explains the etiologic association between alcoholism and upper gastrointestinal tract carcinoma; however, alcoholism may also be associated with tumors of other localizations. Presentation is made of a patient with alcohol dependence with development of meningioma. The patient was admitted to Department of Psychiatry, Bjelovar General Hospital, for the treatment of alcoholism. The history and hetero-history data showed prolonged intensive alcoholism associated with impaired family and occupational functioning. The immediate reason for presentation was his employer's demand to undergo treatment due to severe impairment of occupational functioning. On admission, discrepancy between pronounced memorizing and recollection deficits, and relatively preserved somatic status, free from personality deterioration was observed. Mild dysarthria and coordination disturbances along with verified memorizing deficit indicated neuroradiological studies, which confirmed the suspected brain tumor. Although there are no literature reports suggesting an etiologic association of alcoholism and brain meningioma, the concurrence of alcoholism and many other diseases, with the possible overlooking either of them, was already indicated by Bleuler, noting that the comorbid groups of symptoms may assume an "alcoholic tinge". The aim of the present report is to point to difficulties in the differential diagnosis of alcoholism and to the risk of independent pathologic conditions being masked by alcohol dependence.

**Key words:** *Brain neoplasms – etiology; Brain neoplasms – diagnosis; Alcoholism – complications; Risk factors; Case report*

### Introduction

When the diagnosis of alcoholism is considered, attention is usually focused on early and comprehensive diagnosis that should encompass the numerous complications of alcohol dependence. Only one fourth of alcohol addicts are identified at primary health care, while almost the same applies to hospital non-psychiatric departments. Recognizing the problems caused by alcohol is not sufficient to make the diagnosis of alcoholism; the diagnostician should know the wide range of signs, symptoms and syndromes that will explain the current problem of drinking<sup>1</sup>.

Our attention is mostly focused on the basic clinical pictures caused by alcohol drinks (acute drunkenness and alcohol dependence), then on the many complications due to the development of alcoholism. The professional and scientific efforts address the difficulties encountered in the early medical diagnostic procedure and differentiation between the so-called excessive drinking and alcoholism<sup>2</sup>. Another mental disorder or disturbance may be found to underlie drinking habit, when it is referred to as secondary alcoholism, where the cause and consequence may be difficult to identify<sup>3</sup>.

Alcohol has a very complex action on the human body, which can generally be classified into four groups: (a) direct cytotoxic action; (b) neurochemical and pharmacologic action that leads to physiologic and mental changes characteristic of acute intoxication, alcohol dependence and abstinence syndrome; (c) effect on endocrine

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system; and (d) effect consequential to alcohol metabolism<sup>4</sup>. Repeated intake of large amounts of alcohol can affect almost every organ system, gastrointestinal in particular, followed by cardiovascular, central and peripheral nervous system. Permanent effects on the central nervous system include cognitive deficits, severe memory impairment, and degenerative changes of the cerebellum<sup>5</sup>. Differential diagnosis against other psychiatric disorders or organ states is by no means simple<sup>6</sup>. Association of alcoholism with other physical diseases is known, however, either of them may frequently be overlooked. Comorbid symptom groups may assume an “alcoholic tinge”<sup>7</sup>.

The aim of this case report is to draw attention to difficulties that may be encountered on making differential diagnosis in alcohol addicts. Presentation is made of a patient in whom the clinical picture of alcoholism and its complications was underlain by the development (and masking) of another, quite different disease.

## Case Report

### *Working diagnosis*

On November 12, 2003, a male patient was admitted to Department of Psychiatry, Bjelovar General Hospital, for the diagnosis of the alcohol dependence syndrome.

### Reason for hospital admission

The patient was referred for hospital treatment of alcoholism, on his family and employer's demand. The patient had been drinking for years, at first in company, now for months by himself (“solo-drinker”), not only beer but any alcoholic drink, especially spirit. In the morning, upon waking up, he needed alcohol and had to take some drink. He worked as chief clerk receiving orders at a casting shop. For instance, he took the order from a client from Italy but forgot it and confused it with another one; more than a half of the casts were out of order and the client refused to take them. The patient was not immediately fired by the employer only because of their previous good relations but was faced with an ultimatum, i.e. treatment for alcoholism or notice.

### History

Personal history: born on March 28, 1956 in Bjelovar, Croatia, raised in the family. Until age 10, his father

worked in Ljubljana, coming home only for weekends. The patient considered his father a distant, reserved person, unable to show him love. Therefore he relied on his mother, who also was a strict and rigid woman, and used to punish him corporally. He completed elementary school and secondary technical school in Bjelovar as a good student. He used to wet his bed occasionally until age 11. In company, he was discreet, shy and introvert. In emotionally strained situations, he used to hop with his left leg, thus relieving anxiety. He liked sports and played football. He started smoking cigarettes at age 10. Upon secondary school completion, he was exempted from military service because of sternum anomaly (probably rickets). In adolescence, he was quiet and calm, and liked to go out with his friends. Then he had his first heterosexual affairs, which he considered quite successful. He used to drink alcohol drinks when in company, yet moderately, not getting drunk. Having completed secondary school, he got a job at Fenor, where he worked for 10 months; then he found job at the casting shop in Bjelovar (since 1975). He got married in 1985. He characterized his marriage as “average”, with frequent fights in the last few years “because of his alcoholism”. He had two children, a son aged 18, secondary school fourth grade, and a daughter aged 15, hairdresser school first grade. He took part in the Patriotic War, for 10 months, as member of the 55<sup>th</sup> battalion. He was not wounded and denied any traumatic experience. However, he started drinking more while on the battlefield. In the last two years, he was constantly drinking, even at his work place, which resulted in considerable occupational problems. He was warned of failures on several occasions, and now he was given an ultimatum to seek treatment for alcoholism or he would lose his job. At home, he said, he was attacked by everybody for his alcoholism, everybody yelling at him, then he yelling at them back. In the last six months, he noticed that he had become forgetful, forgetting commitments at his work place as well as various trifles at home. He had also noticed some speech difficulties in the last one to two months. Occasionally he suffered headaches that turned constant in the last few days.

Family history: the patient's father died in 2003 from ICV sequels. The patient's mother is alive and mobile with the help of crutches. He has a sister, by 3 years his junior. There was no psychiatric treatment, alcoholism or suicide in the family.

Somatic disease history: the patient denied any disease or drug allergy, head trauma and loss of consciousness.

### Status on admission

**Psychiatry:** Conscious, oriented, clean and neat; quiet, silent, no spontaneous communication; attention of low tenacity. Pronounced memorizing and recollection disturbances. Normal stream of thoughts. The contents related to current problems at the work place and in the family. No paranoid expression or sensory delusion manifestations. The patient was anxious and worried, in low mood. Good appetite, reporting difficulties on falling asleep and in sleep.

**Neurology:** Conscious, oriented, mobile. Discrete dysarthria. Pupils of normal shape, reactive. Bulbar motoricity normal, diplopia denied. Meningeal syndrome negative. MTR symmetric, brisk. Babinski sign negative. Holding all four extremities in anti-gravity position. On Romberg's test, marked oscillations without lateralization.

**Somatically:** Conscious, mobile, oriented, afebrile, eupneic. The skin and visible mucosa well perfused. Lungs: normal breathing sound on auscultation. Heart: rhythmical action, clear sound, no murmur; rhythm 71/min; BP 150/90. Abdomen: soft and sensitive on palpation, at the thorax level, audible peristalsis. The liver is not palpable. Extremities: no leg edema.

### Studies

**Laboratory:** ESR 12; E 4.9; Hgb 143; Htc 0.44; MCV 90; MCH 29; L 5.5; urine clear, yellow, protein negative, hemoglobin negative, glucose negative, acetone negative; sediment 2-5 leukocytes, 0-2 erythrocytes, rare bacteria, 1-3 epithelial cells, acidic reaction, specific weight 1.025, bilirubin negative, urobilinogen negative, total bilirubin 5.7; AST/ALT/GGT 15/21/27; cholesterol 5.26; triglycerides 1.56; bleeding time 0.02; coagulation time 0.72; prothrombin time 1.04; APTT 31; fibrinogen 3.86; BG 5.2; urea 4.5; creatinine 99; ALP 62; CP 9; PP 1; Na 142; K 4.3; Cl 102.

**Visual field:** normal finding.

**Fundus:** PNO unsharply demarcated along blood vessels on the right; normal finding on the left.

**Lung x-ray:** no recent infiltrative lesions of the lung parenchyma on heart and lung x-ray. The hili of normal appearance. The diaphragm of clear contours and normal position. Free basal sinuses. Heart shadow and aorta within physiologic borders.

**EEG:** medium voltage basic cerebral activity alpha rhythm 8-10 Hz. Partially pronounced reaction of visual

block. Individual slow waves 6-7 Hz recorded over all regions, yet without overt asymmetry. No paroxysmal discharge. No new findings on HV. Conclusion: nonspecific, borderline finding.

**Brain CT:** medially positioned and appropriately shaped fourth cerebral ventricle in the infratentorial region, cerebellar hemisphere absorption coefficient. Appropriate basal cisterns, free pontocerebellar angles. A hyperdense, sharply delineated growth in the supratentorial region, in the anterior fossa, frontotemporally on the right, of some 82 mm in measured diameter, with perifocal edema. Impression of the third and lateral cerebral ventricle on the right, with dislocation of the central cerebral structures across the median sagittal plane. Upon contrast application, intensive opacification of the expansive growth was observed. Conclusion: expansive neoplasm in the anterior cranial fossa on the right, showing intensive opacification upon contrast application, primarily suspect of meningioma. Impression of the cerebral ventricular system with dislocation of the central cerebral structures across median sagittal plane.

**Psychologist:** L-T test – disfiguration, simplification, perseverance – substantially below age and education. Benton test – borderline to pathologic – on reproducing. Recognition below average. W-B test – QD ~35%.

**Internist:** ECG sinus rhythm 71/min, electrical axis with shift to the left; lab normal. Dg.: *Cor comp. Alcoholismus. Tm cerebri*. Cardiac-pulmonary compensated. No indications for operative treatment.

**Neurologist:** Chief clerk in a casting shop, lately repeat failures at the work place, confusing orders. Occasional headaches in the frontal region in the last few weeks. Speech difficulties in the last 1 to 2 months, manifesting as stammering and inability to pronounce words correctly. Neurologic status: conscious, oriented, mobile. Discrete dysarthria. Mydriatic pupils (drops), normal bulbar motoricity, diplopia denied. Meningeal syndrome negative, MTR symmetric, brisk, Babinski sign negative. In AG position, normal extremity maintaining. On Romberg's test, marked oscillations without lateralization. Dg.: *Tm cerebri*. Therapy: mannitol 10% 2x250 mL iv., possibly corticosteroid therapy. A finding for telemedicine.

Neurosurgeon's telemedicine reply: brain CT probably showing a meningioma frontotemporoparietally; neurosurgical treatment indicated; the patient should be referred for hospitalization at University Department of Neurosurgery, upon appointment.

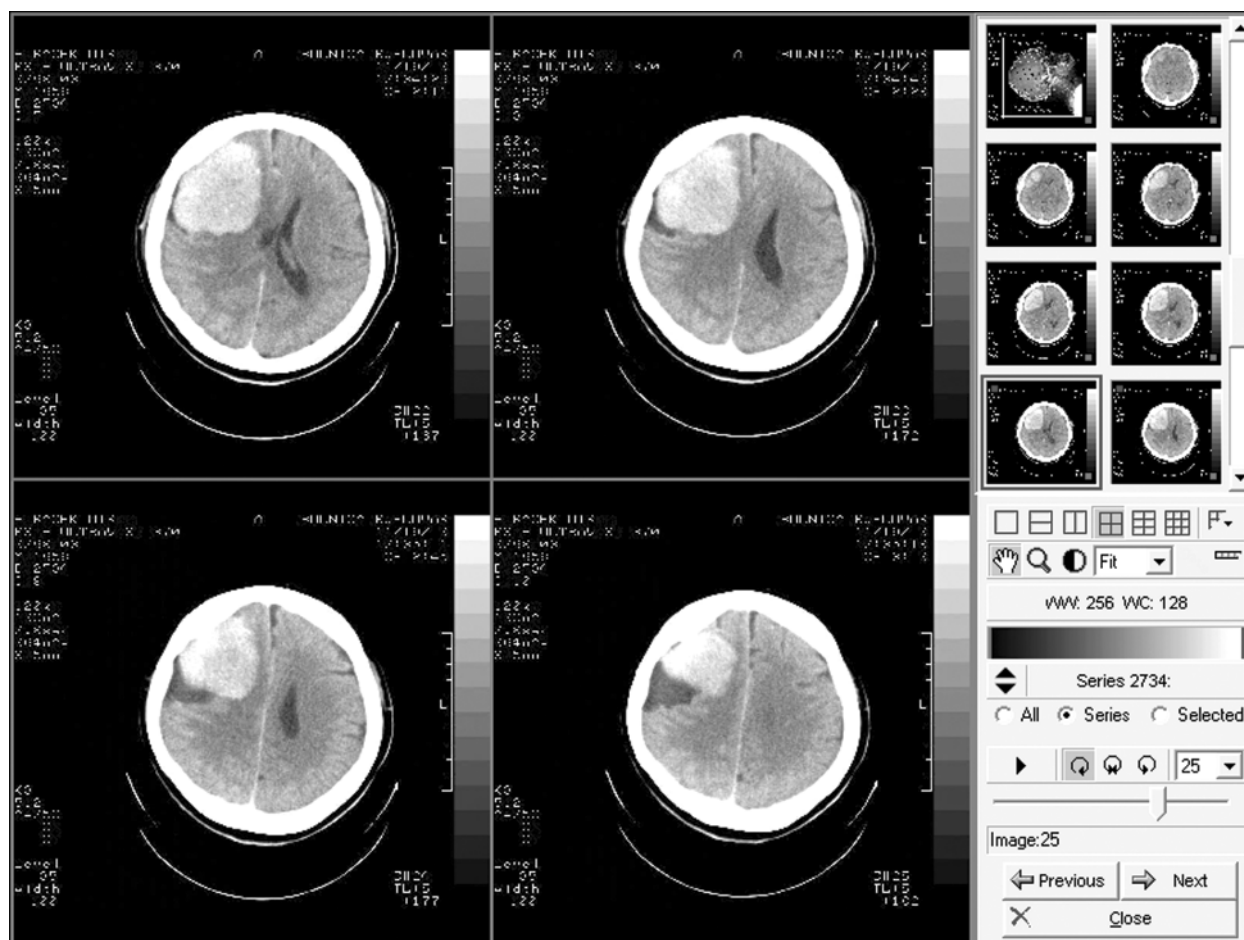
## Course of disease

The patient was admitted to Department of Psychiatry on November 12, 2003, accompanied by his cousin working at Bjelovar General Hospital Technical Services, who provided heterohistory data. These data revealed a several-year history of excessive drinking that had intensified over the past few months, while the immediate reason for the patient's referral for hospital treatment was his severely impaired occupational functioning. On examination, the patient was sober, confirming intensive alcohol consumption. Recently, he had been constantly drinking, at home and at his work place, hiding alcohol drinks everywhere at home. This resulted in great problems with his family, at the work place and in the society in general. He was motivated for the treatment of his alcoholism. On examination, he showed

marked memory disturbances (e.g., he could not remember the dates his children were born). Psychological examination confirmed significant impairment of his mnemonic abilities. EEG finding showed nonspecific changes; funduscopy revealed mild papillary edema on the right; brain CT confirmed the suspicion of brain tumor, i.e. meningioma located frontotemporoparietally on the right, 82 mm in diameter. Upon telemedicine consultation, a neurosurgeon indicated transfer to University Department of Neurosurgery for operative treatment.

## Discussion

The association between alcohol consumption and neoplasms is multifaceted and complex. The association of alcohol and upper gastrointestinal carcinoma is



*Fig. 1. Brain CT scan (November 19, 2003): expansive growth in the anterior cranial fossa on the right, with intensive opacification upon contrast application, primarily suspect of meningioma. Impression of the ventricular system of the brain with dislocation of the central cerebral structures across the median sagittal plane.*

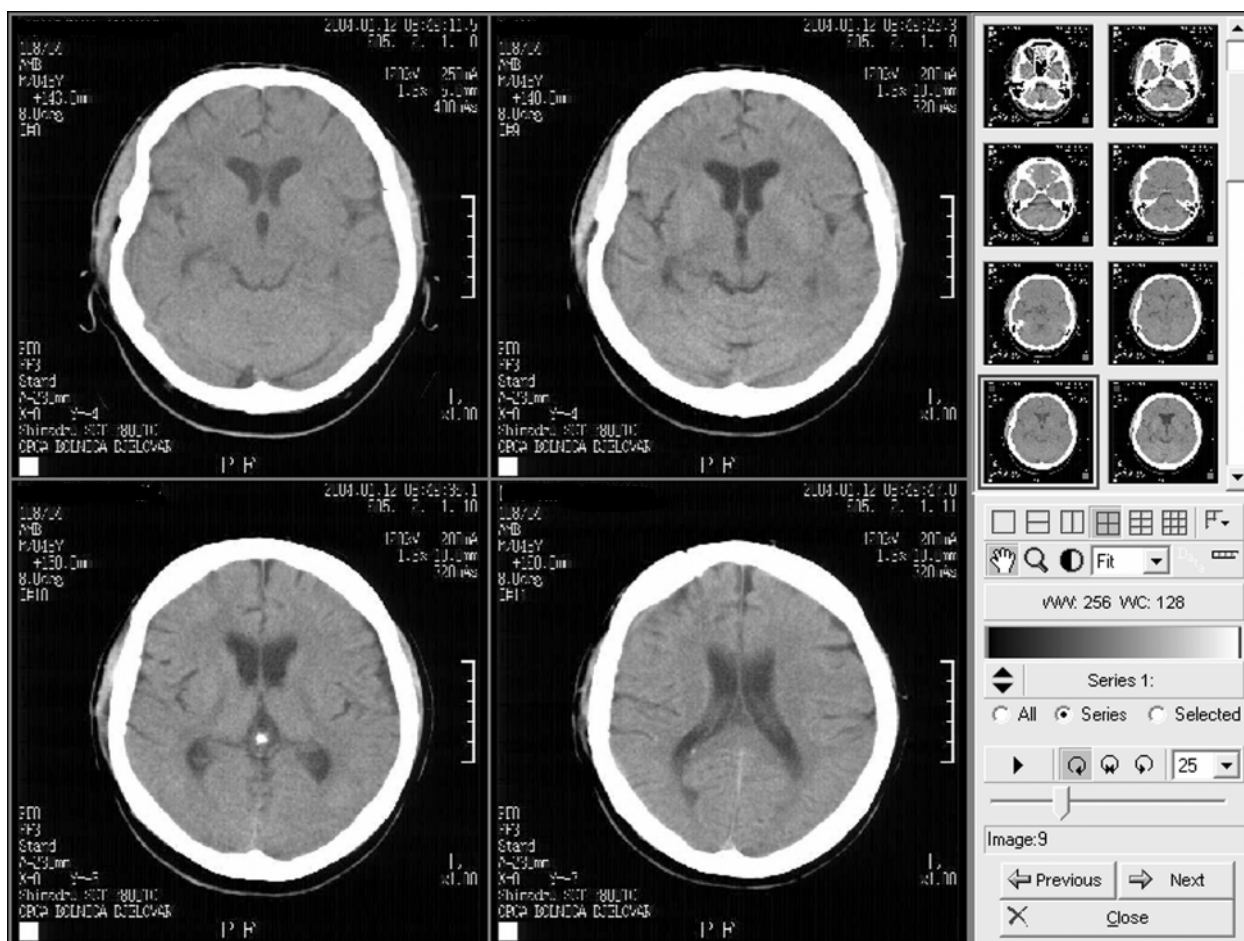
best characterized<sup>8-11</sup>, whereas results of the studies performed in carcinoma of the breast<sup>12</sup>, colon<sup>13</sup>, pancreas<sup>14</sup>, liver<sup>15,16</sup> and in gynecologic carcinomas<sup>17,18</sup> are less consistent. Alcohol is considered to play a direct causative role in some carcinomas such as carcinoma of upper gastrointestinal tract. However, alcohol also exerts action at the gene level<sup>19-23</sup>. Acetaldehyde as a product of alcohol metabolism impairs the cell ability of its own DNA repair, which results in higher probability of oncogene mutations (genes that normally stimulate cell division). Neoplasm initiation is characterized by irreversible cell DNA damage, so that once the cell is stimulated to division cycle it will continue doing so indefinitely. In breast cancer, alcohol is considered to act by increasing estrogen levels, which then stimulate the development of carcinoma. Alcohol induces cytochrome P-450 in the liver, lungs, esophagus and intestine, which

appears to account for the cocarcinogenic effect of alcohol (enhancing the carcinogenic effects of other substances). Heavy alcoholics have decreased levels of iron, zinc, vitamin E, vitamin B group and vitamin A, which all exert protective action on the body. Also, alcohol impairs immune response.

Direct association between alcohol consumption and brain tumor is not mentioned in the available literature, however, alcohol neurotoxicity is a fact beyond doubt.

## Conclusion

Prolonged alcohol consumption triggers many pathogenic mechanisms in the body, some of them leading to the development of malignancy. In addition, some other severe diseases may proceed unrecognized being masked by alcohol dependence, although their etiolog-



*Fig. 2. Brain CT scan (January 12, 2004): State post-neoplastic craniotomy frontotemporoparietally on the right and meningioma operation with a minor area of malacia parietally on the right, cortically-subcortically, without signs of local relapse or residue.*

ic association with alcoholism has not been demonstrated to date. In daily routine, a clinician should not forget the risk of some independent pathologic conditions being potentially masked and disguised by alcohol dependence.

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## Sažetak

## ALKOHOLNA OVISNOST U BOLESNIKA S TUMOROM MOZGA

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Alkoholizam je praćen brojnim tjelesnim, neurološkim, psihičkim i socijalnim komplikacijama. Stručna literatura objašnjava etiološku povezanost alkoholizma i karcinoma gornjeg probavnog sustava, ali je moguća povezanost i s tumorima drugih lokalizacija. Prikazuje se bolesnik ovisan o alkoholu kod kojega se je razvio meningeom. Bolesnik je primljen na Odjel za psihijatriju Opće bolnice Bjelovar radi liječenja alkoholizma. Anamneza i heteroanamneza su ukazale na intenzivni višegodišnji alkoholizam sa zakazivanjem u obitelji i na radnom mjestu. Neposredni razlog za upućivanje na liječenje bio je ultimatum poslodavca zbog zakazivanja na radnom mjestu. U statusu je već kod prijma uočen nesklad između izraženog mnestičnog deficita i relativno očuvanog somatskog statusa, bez pogoršanja ličnosti. Blaža dizartrija i smetnje koordinacije uz potvrđene mnestične smetnje ukazivale su na potrebu neurološke obrade, koja je potvrdila sumnju na tumor mozga. Literatura ne ukazuje na etiološku povezanost alkoholizma i meningeoma mozga, ali je još Bleuler pisao o istodobnoj pojavi alkoholizma i mnogih drugih bolesti, uz opasnost previda jedne od njih, navodeći kako komorbidne skupine simptoma mogu dobiti "alkoholnu boju". Cilj rada je ukazati na diferencijalno dijagnostičke teškoće pri obradi alkoholičara i opasnost prekrivanja nezavisnih patoloških stanja plaštem alkoholne ovisnosti.

*Ključne riječi: Neoplazme mozga – etiologija; Neoplazme mozga – dijagnostika; Alkoholizam – komplikacije; Rizični čimbenici; Prikaz slučaja*