**MASTOIDECTOMY (PERISINOUS ABSCESS, EXPOSURE
OF DURA) FOLLOWED BY ATTACKS OF TOXIC
INSANITY. RECOVERY.***

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Whether or not an affection of the ear is directly or indirectly the cause of insanity has not as yet been decided. W. Sohler Bryant, after examining a number of insane, concludes, that aural disease in some cases has an effect upon the form of psychosis by giving rise to certain hallucinations of hearing. In a smaller number of cases ear disease appears to be an inciting cause of insanity, because of its influence on psychic functions as well as a systemic infection. When the organ of hearing has been operated upon, especially when such vital brain tissues as the sigmoid sinus and the dura had to be exposed, with the factors of anesthesia, shock and systemic absorption playing an important role, the possibility of otogenous disturbance of mental equilibrium looms even larger. Emile Amberg, in his excellent essay on Ear Affections and Mental Disturbances, states, that in the toxemic, exhaustive and irritating conditions accompanying or following an inflammatory infection within the ear, the patient must, under certain circumstances, be considered, for the time being, as mentally inferior. J. A. Hagemann, in his treatise on "A Rhinologic Aspect of Some Mental Disturbances," points out that some toxins or substances whose essence we are not yet familiar with, exert a malificent influence upon the association centers in the brain, and the human economy, apparently, does not produce any contesting anti-toxins. W. A. Janes, in an article on Insanity from Autotoxic Poisoning, draws attention to the organs of transformation and arrest of normal and abnormal production (liver, gastro-intestinal mucous membrane, spleen, lymphatic nodes, adrenals and thyroid gland) and to the organs of elimination (kidneys, lungs, skin and intestines) as possible otologic factors. A. M. L. Hamilton considers intestinal auto-intoxication as the cause of insanity and believes that the more sudden and active the manifestations of delusions or hallucinations are expressed, the more positive are the indications of auto-intoxication. Acute and infectious diseases are, according to J. B. Ayes, frequently followed by insanity. He mentions amongst others, cases of insanity in the course of pneumonia and "catarrhal colds." Couk-

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pepper, in his work written prior to 1654, says: It is probable that some certain poison in the body may be the chief cause of madness. According to Charles K. Shillo and others, the mental disorders at pregnancy and puerperal state, are probably in a considerable portion of cases toxic, without reference primarily to childbirth. *Assuming that insanity in these cases is of toxic origin, why do only a comparatively small number of cases, after childbirth, infectious disease, anesthesia, surgical interference, etc., show mental aberrations, ranging from mild psychosis to pronounced insanity?* Because the majority of people do have more or less normal mentality and even these toxic influences cannot easily upset their mental equilibrium. Conservative neurologists would try to explain the insanity of toxic origin, by molecular or otherwise determinable changes within the brain matter. The psychanalyst denies the importance of an underlying anatomic substratum for psychic processes. He explains our actions by the struggle of suppressed wishes and fears and considers overwhelming complexes at the root of our personality. *Only in specially susceptible subjects with labile mental equilibrium will these toxic influences derange the normal psychic mechanism.* A psychanalytic study of these cases will be of great interest and value.

The case presented tonight suggests the assumption that the toxic factor alone is not responsible for the attacks of insanity following mastoidectomy, although the focus of infection is so near the brain, especially with pus surrounding the sinus and dura. It is rather a combination of somatic and psychic causes. *The repressed wishes and fears, based on actual facts in the patient's life, immediately preceding the operation, due to the toxic influence, are aroused and thrust over the threshold of unconsciousness and become manifest in these attacks of insanity.*

Case Report. Mr. H. T., 29 years of age, was referred to me on October 24, 1919, by Dr. M. Fishberg, who saw him only once, after he came to New York, from Dupon, Pa.

Past History. Patient has always been well before and never suffered ear trouble. About three months before his visit to the office he experienced severe pains in his right ear, which kept him awake at night. He also had fever. The doctor who treated him did not advise paracentesis. Several days later the ear opened spontaneously and discharged for a little while. The pain, however, grew worse and extended towards the neck and head. He became very dizzy and weak. About four weeks ago he came to New York. Paracentesis was performed in a hospital and he was told to return

home. The ear kept on discharging very freely. The last few days his pain grew worse; he became very dizzy and weak. Because of a severe cough and suspected lung trouble he was brought to Dr. Fishberg, who, recognizing the ear as the underlying condition, and sent the patient to me.

Physical examination showed a rather well nourished male in a state of marked prostration. He could scarcely walk; looked very pale and sick; complained of excruciating pains in the right ear and of dizziness. The right drum membrane was discharging freely. The upper posterior canal wall was sagging. There was redness over the right mastoid region and severe tenderness to pressure over the entire mastoid bone, especially far backward in the region of the sinus. The local symptoms, together with the apparent brain complications, made an immediate opening of the mastoid and an exploration of the adjoining brain structure imperative. The patient, however, postponed the operation for over a day and his condition became worse. An X-ray picture of both mastoids showed a destruction of cells on the diseased side.

On October 25, 1919, at 5 p. m., I performed the operation at Beth David Hospital, Dr. Call and Dr. Bernstein assisting. The mastoid cavity proved to be totally destroyed and filled out with pus and granulation tissue. The destruction reached up to the dura, which was exposed and found apparently normal. Backward and downward there was an extensive perisinous abscess which reached from the sigmoid sinus downward to the region of the bulb, from where pus was constantly oozing alongside the sheath of the blood vessel. The sinus was exposed to the extent of $1\frac{1}{2}$ inches and was found to be pulsating, its wall of apparent normal color. Thrombosis was therefore not suspected. After removing all the diseased tissues, including the entire tip, and after enlarging and curetting the necrotic antrum, the mastoid cavity represented the size of a large wall nut. Due to the exposure of dura and sinus the cavity was not closed but lightly packed. The regular dressing was applied. The patient soon came out of the anesthesia and felt quite well. The dressing was changed every second day, the wound looked nice, the patient being comfortable. For the following description of the course of the disease I am indebted to the house doctor, Dr. Lewinson. On the fifth day, towards evening, the patient appeared somewhat stuporous, his pupils were widely dilated. The same night he became very talkative and would not permit anybody, including doctors and nurses, to approach his bed. He claimed he saw a fly at the other end of the room which was the angel of

death. He asked that the window should be opened as his wife and children were waiting outside in an aeroplane. He accused everyone in the room of being a conspirator and his enemy. He became very violent and jumped out of the bed. By great force only could he be given a hypodermic injection, and he shouted that this was the sting of the angel of death (the fly). Even after repeated hypodermic injections, he had to be tied down to the bed, and then slept until morning. He woke up with manifestations of great violence and he would knock at the window calling people for help.

Dr. H. Climenko, called into consultation, made the following observations: Patient is orientated as to time and place, complains of pain. Without being asked, he tells an incoherent story of a fire in his place of business for which he was accused of arson. He motions with the hand constantly, driving away the angel of death. He sees flies in the air, and claims that someone persecutes him without reason. He has auditory hallucinations. He hears a train wreck in which his wife and children perish. His speech is incoherent.

Physical Examination. Knee and ankle jerk lively. Babinsky absent. Left plantar surface irritated, ankle clonus absent. Some spasticity in left lower extremity, not enough to be called Kernig. Abdominal reflexes present. Both protopathic and epicritic sensibility present in lower extremity. Wrist and elbow reflexes present. No astereognosis. Some clumsiness of right upper extremity; diadochokinesis. Slight ataxia in right upper extremity. Facial innervation weaker on right side. Marked asymmetry of face, especially lower two-thirds. Divergence of right eye and slight von Graefe. Nystagmus absent. Pupils react promptly to light. Disk clear-cut, no break in blood vessels, no tension. Mobility of lower extremities normal. No past pointing in upper extremities. Slight tremor of right hand. Romberg not absolute, slight swaying. Gait staggering, head bent to right side.

Dr. Climenko expressed the opinion that we might have to deal with a tempero-sphenoidal abscess and advised the exploration of this part of the brain in case the attacks of insanity should continue, especially when the optic disc should show changes.

From now on, for six days, the patient acted in the same manner. During the day he would be quiet, reasonable and well orientated. He recognized everyone and apologized to doctors and nurses for his bad behavior on the previous night. He took food willingly but showed no interest in his surroundings. With the approach of

dawn he would begin to express great fear. He would even distrust members of his own family. He talked incessantly until foam appeared on his lips. He expressed religious fear. He said God punished him for his past deeds, he asked God to forgive him for going out with indecent girls and for having secret relations with his sister-in-law. He was constantly reciting prayers in Hebrew, at times he would refuse food, claiming it is fasting day. He tried to convince God that he did not commit arson when his place of business burned down. He also tried to bribe God by offering charity. He was extremely restless and threw off the dressing. His people urged that something should be done and almost insisted upon an exploratory operation on the brain. I refused to do so, claiming that we were dealing, not with a brain abscess, but with toxic insanity, which in due time will disappear.

At this time, the second neurologist, Dr. Isidor Abrahamson, was called into consultation, who saw him at daytime, during his time of quietness and orientation. He gave me the following report:

Left hemiparesis, mainly face, less arm and hand, least in leg. Tendon reflexes livelier on left side. Superficial and corneal reflexes normal. Left abdominals diminished as compared to lively right. Right plantar reflex always flexor type, left frequently extensor, but no Babinsky; same of Chaddock. Mendel Bechterew present left. Left adeodochokinesis. Left upper extremity ataxia, overpointing. Tremor both hands, especially left. Pupils, ocular movements, normal. Fundi; slight venous congestion. Visual fields normal. No sensory disturbances, no astereognosis, no disturbance of deep sensibility. Physically: patient completely orientated as to time, place and person; memory good, speech normal, attention O. K. No evidences, at time of examination, of hallucinations or delusions as determined by the actions of the patient. Patient tells freely of his hallucinations and ascribes his delusions to dreamy states of consciousness.

Summary of Findings. (1) Signs along left half of body; (2) dreamy states characterized by visual hallucinations; (3) mastoiditis, involvement of the brain substance, etc.; (4) clear intervals.

Conclusion. (1) Spinal fluid examination for cells, etc., necessary; (2) strong suspicion of temporo-sphenoidal abscess; (3) further observation necessary for (a) spread of signs and symptoms, (b) formation of laudable pus at the side of involvement, (c) exploratory operation then. After this report, when during the next two days the attacks of insanity continued, the people urged me to perform the operation upon the brain. However, I refused to

do so. Spinal puncture showed fluid under moderate pressure, negative for Wassermann. Cytology was normal and no bacteria present. The fluid was clear and one + for globulin.

Gradually the patient became more and more sensible at night and would talk less, falling asleep when exhausted. During the day he would even read the newspaper intelligently. He soon had perfectly quiet nights. He now recollected in terms of fear all his delirious acts, explained he heard threatening voices, saw faces and people (dead and living) calling him and God, who appeared to him asking him to lead a more religious life and do more charity.

On November 20 he was discharged from the hospital. The mastoid wound was dressed a few more times and was totally healed on December 8.

On December 10 I sent the patient back to Dr. Abrahamson, in order to have a neurological report of his present condition. It is as follows: Subjectively—slightly blurred vision occasionally, especially at home, perhaps some dizziness, no tinnitus, no diplopia. Poor sleep. Awakens after a few hours of sleep and finds it then hard to fall asleep again. Bowels as always somewhat constipated. *Psychically, patient is subjectively and objectively normal.*

Physical Examination. Right pupil larger than left, both react normally. Insufficient convergence O. D. The right eye is more prominent. Upward rotation of right eye more than left. Right aperture larger than left. Weakness of left lower two-thirds of left facial innervation, seen especially when laughing. Jaw jerks lively, jaw to left and downward, chin to right, head flexed on left shoulder. Grips, right stronger than left. Tendon reflexes lively all over but equal. Abdominal reflexes lively, equal; plantar reflexes normal equal. Fundi oculi normal. No corneal anesthesia. No Romberg, no ataxia, no tremors, no past pointing, etc. Power in lower extremities equally normal. Nystagmus very easily induced on rotation, especially when rotating to right; nystagmus to left.

SUMMARY.

Very little left that is pathological as far as the central nervous system is concerned. The deviations from the normal in the right eye may have pre-existed the mastoid and cerebral involvement. No evidence now of mental disease. I would regard the entire picture presented by the patient at my first examination as composed by two components: (1) a local edema of the right temporo-sphenoidal lobes, (2) general toxic manifestations in the course of septic disease. With the recession of the focal edema most of the focal

signs vanished. With the recession of the infection, the infectious toxic signs vanished.

The following were the laboratory findings during the stay of the patient in the hospital; cerebrospinal fluid, reported above.

Urine was examined daily; during the period of actual delirium it showed albumen and few hyaline casts.

Blood. White blood count first 12,000, gradually decreased to 9,000. Differential count was at first 82 polys and gradually decreased to 75. Blood Wassermann negative.

The temperature varied from 99° to 101° F. The variations were very irregular and apparently not coinciding with the variations in mental equilibrium. Pulse varied from 76 to 95, only once being 100; respirations 22 to 26.

An inquiry into the patient's life elucidated the fact of the fire which destroyed his place of business, for which he collected insurance and for which he was falsely accused of arson. There seems to be also quite some foundation for the sins he tried to bribe God for, during his attacks of insanity.

The following conclusion may be drawn from the report of the above case: Attacks of insanity following mastoidectomy, especially with exposure of sinus or dura, are of toxic origin. The hallucinations and delusions point also to a psychic cause or rather susceptibility, which is founded on certain suppressed wishes and fears that occupied the patient's unconscious state previous to the operation. The otologist should therefore also have some understanding of the psychanalytic side of the problem.

Previous to any operation, especially on structures near the brain, an investigation of the patient's psychic status should be made. In case such post-operative attacks of insanity occur, mind rather than matter will then be regarded at fault. Disregard for the psychic aspect of the problem may incorrectly lead to the assumption of a tempero-sphenoidal abscess being the cause of these attacks of insanity and may lead to unnecessary exploration of the brain.

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