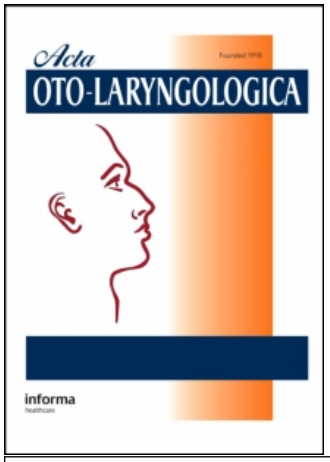

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Vincent's Violent Vertigo: An Analysis of the Original Diagnosis of Epilepsy vs. the Current Diagnosis of Meniere's Disease

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Vincent's Violent Vertigo

*An Analysis of the Original Diagnosis of Epilepsy vs. the Current Diagnosis of Meniere's Disease**

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The authors propose to correct the historical misimpression that Vincent van Gogh's medical problems resulted from epilepsy. Rather, the authors propose his main medical problem was Meniere's disease. The authors have reviewed the 796 personal letters written by van Gogh. The symptoms of his Vertigo attacks, their presentation and duration as described in these letters, taken as a whole, are consistent with the clinical picture of Meniere's disease, not epilepsy. They point out that Prosper Meniere's description of his syndrome was not well known at the time of van Gogh's death, and was often misdiagnosed as epilepsy. During the last years of his life, van Gogh was labeled epileptic, although no rigid criteria for this diagnosis are evident. This diagnosis is still prevalent in the art history literature today. His symptoms included episodic vertigo and dizziness, physical imbalance, hearing symptoms, ear noises (tinnitus) as well as a presumed secondary psychological reaction to his physical symptomatology. van Gogh's diagnosis of epilepsy is based on written diagnosis in his medical records in 1889 when he was interred (voluntarily) in St. Remy at an asylum for epileptics and lunatics. *Key words. Vincent van Gogh, inner-ear disease, endolymphatic hydrops, Meniere's disease, vertigo, epilepsy.*

INTRODUCTION

Vincent van Gogh was born in Zundert, Holland, on March 30, 1853 and died by his own hand at the age of 37, in Auvers, France on July 29, 1890. His creative genius, possible "madness", and the popularity of his works have made his short but productive life the subject of challenging discussions among literary, artistic and medical professionals ever since. His voluminous correspondence (1) to his family and friends has been a great resource and insight into this man's life, art and times, and also an untapped resource into the retrospective clinical history of his illness. Historically, there is no question that van Gogh suffered from intermittent attacks of some sort of physical ailment. van Gogh had an illness which was characterized as "attacks," often in clusters, and interspersed with symptom free periods lasting for "months at a time". Though many theories have been proposed to explain van Gogh's illness, the diagnosis most generally accepted in the non-medical literature is epilepsy. This diagnosis was made in 1889 by Dr Peyron when van Gogh admitted himself to the asylum for epileptics and lunatics at St. Remy. Although during his lifetime, van Gogh was labeled "epileptic," no rigid criteria for this diagnosis are clear. We believe that sufficient clinical evidence is available from his own description of his medical illness in his letters to suggest that he suffered not

* The article on Vincent van Gogh's Meniere's disease is published in its entirety as it was orignally submitted to JAMA. That was a shortened version focused primarily on the misunderstanding of epilepsy and Meniere's disease in the 1880s in France. The basic points of the diagnosis of Meniere's disease are based on van Gogh's statements in his letters of his attacks of "le vertige". This article is published with permission of JAMA, the editors, and authors. Arenberg, I. K., et al.: van Gogh had Meniere's Disease and not epilepsy. JAMA 1990; 264: 491–493 (32).

from epilepsy but from attacks of Meniere's disease, an inner ear disorder. van Gogh's symptoms included episodic vertigo, positional imbalance and dizziness, as well as cochlear symptoms of ear noise (tinnitus), noise intolerance, possible hearing loss during his attacks, and a psychological reaction to his physical symptomatology.

This inner ear disorder was first described by the French physician Prosper Meniere in 1861 (2). Meniere's disease—symptom complex—is manifested by the same symptoms that van Gogh described in his letters: 1) episodic vertigo and dizziness associated with nausea and vomiting, 2) physical imbalance with positional exacerbations, 3) tinnitus (ear noises), 4) a sense of aural fullness and pressure, and 5) fluctuating abnormalities of hearing, including noise intolerance. Our proposal that van Gogh suffered from inner ear dysfunction and not epilepsy is derived from van Gogh's self-description of his condition in some 796 letters written to his family and friends (1). This view is shared by Yasuda (3).

The authors propose to correct the historical misimpression that Vincent van Gogh's medical problems resulted from epilsepsy. Based on evaluation of van Gogh's letters as the source of his clinical history, we do not believe that his medical problem from which he suffered in the last years of his adult life was related to epilepsy or a seizure disorder, even if he had such a disorder. Clearly his attacks lasted much too long to be seizures which usually last from seconds to minutes. Also his spells or attacks were of vertigo (*le vertige*) by his own words and were exacerbated by motion and by loud noises, which would be very unusual for seizures, and no recognizable motor convulsions were ever described.

The authors have reviewed the 796 extant letters (1) written by van Gogh to family and friends between 1884 and 1890, and propose that his main medical problem was Meniere's disease. The clinical history derived and quoted from his letters describe a consistency of his symptoms with the clinical picture of Meniere's disease and idiopathic endolymphatic hydrops and not epilepsy. In contrast, the medical records of Vincent van Gogh made by the doctors and institutions where he was intermittently treated, show a diagnosis of epilepsy was made. This diagnosis of epilepsy is not supported by his own written descriptions of his medical problems. The authors point out that Prosper Meniere's description of his syndrome of inner ear dysfunction was not well known at the time of van Gogh's death. Charcot, the leading neurologist of the time, was aware of the difficulty to distinguish these two entities and noted, as indicated above, that Meniere's disease was frequently misdiagnosed as an epileptic or epileptiform disorder. We believe this was the case for van Gogh. This inner ear syndrome of Meniere's disease, however, was not widely recognized at the time of van Gogh's illness. Careful review of his extensive correspondence clearly supports a medical diagnosis of Meniere's disease and not the diagnosis of epilepsy which was his written diagnosis in 1889 when he was interred voluntarily in St. Remy, an asylum for the epileptics and lunatics.

Part of the confusion in the 1880's between epilepsy and Meniere's disease was that the general medical population understood very little about inner ear disease with its clinical symptomatology often misdiagnosed as epilepsy, brain disorder, cerebral congestion or apoplectiform type seizures or fits. Prosper Meniere in 1861 (2) made the first clinical distinction separating inner ear dysfunction from epilepsy. His new idea was unpopular, although accepted by the famous physician Armand Trousseau in 1861 (4). It was many years before the medical community accepted inner ear disease as separate from epilepsy and central nervous system dysfunction.

Today van Gogh is universally recognized as an artistic genius, but some mysteries regarding his bizarre behavior persist. Why did this eccentric and puzzling artist mutilate his own ear? Why did he shoot himself when he was apparently at the height of his artistic productivity?

Toward the end of his tormented life van Gogh was plagued by what he perceived and understood from his doctor was a recurrent, episodic and hopelessly incurable illness (1).

I must also say that M. Peyron does not give me much hope for the future and I think this right, he makes me realize that *everything* is doubtful, that one can be sure of nothing before hand. I myself expect it [the attacks of *le vertige* (added)] to return . . . and that things may continue this way for a long time (no. 605, September 10, 1889—St. Remy).

Between 1888 and his death in 1890, the "attacks" of *le vertige* as he referred to them, grew more intense and more frequent (1) (see discussion below). His major attacks are thought to have started in Paris in 1887 and then recurred on December 24, 1888 (Arles, self mutilation), again in St. Remy (1889) where he was voluntarily committed to an asylum for epileptics and under the care of Dr Peyron, and again in Auvers in 1890, where he was unofficially under the care of Dr Gachet and where his self-inflicted, abdominal gunshot wound ended his life several days later on July 29, 1890. We believe these "attacks" were disabling and led to significant despondency, culminating in self-mutilation and suicide. Art historians agree that van Gogh's art and life were dramatically affected by some malady in his last years (5).

Most physicians of van Gogh's day and certainly prior to 1861, did not know what questions to ask regarding the clinical history of inner ear dysfunction to differentiate it from a central nervous system disorder such as epilepsy. Therefore, the information contained in van Gogh's letters (1) provides spontaneous self-description of his symptomatology and not the response to directed clinical inquiries. This leaves some questions unanswered still. Nonetheless, it is interesting to note that a Japanese otologist, Yasuda, published a paper in Japanese in 1979 independently suggesting that van Gogh had Meniere's disease (4), and that his art was affected by the status of his inner ear disease process and the associated pathologic eye movements (nystagmus).

METHOD OF STUDY ANALYSIS

In this study, we attempt to describe what was known of van Gogh's symptoms, according to his own descriptions, in an extensive series of extant letters to his brother, sister, mother, and friends and colleagues. Reconstruction of his medical history and related problems from his letters, rather than his art or his medical records, differs from many medical studies on van Gogh (6, 7, 8). As Perry observed:

It is unlikely that he ever gave a physician a comprehensive history of himself. The significance of his whole history was not recognized until the letters were posthumously published (9).

MAKING A RETROSPECTIVE DIAGNOSIS OF INNER EAR DYSFUNCTION AND EARLY MENIERE'S DISEASE (ENDOLYMPHATIC HYDROPS)

The hypothesis that van Gogh suffered from inner ear dysfunction and early Meniere's disease (10) as his major medical problem is consistent with the historical facts as set forth in his letters (1). The cause of his Meniere's disease is unknown and therefore idiopathic (11). The focus of this paper is not on the etiology or pathophysiology, nor is it related to treatment; rather the focus is on the correct diagnosis of Meniere's disease in Vincent van Gogh in 1889 in contrast to the misdiagnosis—epilepsy.

It is well known that patients with chronic, recurrent, episodic vertigo and dizziness can develop severe *secondary* psychological problems (12), including bizarre behavior. Only chronic pain produces a more severe psychological response (12). We know from letters (1) between Vincent and his brother Theo, his sister Wilhelmina, and his friends Paul Gauguin, Emile Bernard and others, as well as medical records, that Vincent suffered with vestibular and auditory symptoms consistent with Meniere's disease and depression. We believe his struggle to maintain physical and emotional control and a psychological balance over his life, temperament and art in the face of his chronic, progressive, although episodic, symptoms account for idiosyncrasies in his personal behavior and his art. This eventually led to his self-

mutilation and suicide. Studies of contemporary patients with inner ear dysfunction support this (12).

Emotional stress is common in this population (12). Clinicians often have difficulty distinguishing the medical symptomatology of Meniere's disease (10) from the associated psychological upset and stress which accompanies the vertigo. Frequently the patient is led to believe that his condition is hopeless, as was van Gogh's, when they are told: "Nothing can be done for you."

The increasingly frequent, severe attacks of vertigo with exacerbations and remissions as well as problems of dysequilibrium as described by van Gogh are suggestive of labyrinthine vestibular crisis. His descriptions are consistent with the auditory symptoms of noise intolerance (recruitment), ear noises (tinnitus), and aural fullness and pressure. The following is an attempt to reconstruct a clinical history for each of the components of inner ear dysfunction (13) compatible with endolymphatic hydrops and Meniere's disease. Examples of van Gogh's original handwritten letters with sketches (14) are interspersed.

SYMPTOMS OF INNER EAR DYSFUNCTION

Vertigo, dizziness, dysequilibrium and balance dysfunction

van Gogh stated he had experienced "dizziness" (*vertige*) in his letters to Theo. Letter no. 605 (September 10, 1889) is critical to the argument that he suffered from inner ear or labyrinthine dizziness and vertigo (*le vertige*). In this letter, van Gogh refers to "recover[ing] a more balanced temperament", referring to his general state of mind. In this same letter, he states that he has frequent, but intermittent (*si souvent*) attacks of vertigo and dizziness. We believe these "attacks" are attacks of vertigo or dizziness most common in Meniere's disease and not of epilepsy:

> Life passes like this, time does not return, but I am dead set on my work, for just this very reason, that I know the opportunities of working do not return.
>
> Especially in *my case, in which a more violent attack may forever destroy my power to paint.*
>
> During the attacks I feel a *coward before the pain and suffering*—more of a *coward than I ought to be,* and it is perhaps this very moral cowardice which, whereas I had no desire to get better before, makes me eat like two now, work hard, limit my relations with the other patients for fear of a relapse—altogether I am now trying to recover like a man who meant to commit suicide and, finding the water too cold, tries to regain the bank.
>
> After all, one must not only make pictures, but one must also see people, and from time to time recover one's balance and replenish oneself with ideas through the company of others. I have given up the hope that it will not come back—on the contrary, we must expect that from time to time I shall have an attack.
>
> *But I cannot live, since I have this dizziness (vertige) so often, except in a fourth- or fifth-rate situation* (no. 605, September 1889 (italics added).

This shows that the probable cause of van Gogh's despondency and despair was the physically debilitating effect of his recurrent illness and attacks; we do not believe these are the ravings of a lunatic. Additionally, van Gogh reported to Wilhelmina (W 4 (1)), "Vertigo was felt with me always" (*javais toujours des vertiges*). And to Theo, "An attack of vertigo comes on in the long run" (*c'est a avoir le vertige* (no. 638 (1)). Van Gogh's letters contain many other references to his attacks of vertigo (see quotes from letters nos. 592, 604, 605, 638, 692, W 4, W 11, etc.). Van Gogh himself suggests that his attacks may have a physical etiology, a disorder of the ear and auditory nerve. (See letter no. 592, May 25, 1889, quoted below.)

The onset of his attacks of dizziness and vertigo, not epilepsy, first were described by van Gogh in his Paris days, "In Paris . . . I was always feeling dizzy . . . and at that time it was recurring to me rather regularly (W 4 (1)) (. . . *à Paris . . . j'avais toujours des vertiges . . . mais qui, labas, revenaient regulièrement*). Again to Wilhelmina he wrote, "So far I have had four major attacks" (W 11 (1)), and to Theo he wrote, "My illness was smoldering while I was in Paris" (no. 604 (1)). It is important to note (as is the accepted standard today (15)) that he

differentiated minor and major attacks of vertigo—*minor attacks or adjunctive spells for example* (15), "Vertigo was felt with me always" (W 4 (1)), compared to *major attacks or definitive spells* (15), "So far I have had four major attacks" (W 11 (1)). In letter no. 592, May 25, 1889, below, van Gogh describes the fact that he had minor attacks or adjunctive spells in between his major attacks:

> Now that it (the attacks of *le vertige*) has gone on decreasing for five months, I have good hope of getting over it, or at least, of not having such violent attacks (no. 592, May 25, 1889, St. Remy).

This separation of major and minor attacks of *le vertige* by van Gogh sounds very similar to the criteria established by the American Academy of Ophthalmology and Otolaryngology in 1972 (15) for reporting about Meniere's disease. The American Academy of Ophthalmology and Otolaryngology defined Meniere's disease as ". . . a disease of the membranous inner ear characterized by deafness, vertigo, and usually tinnitus, and has as its pathologic correlate hydropic distention of the the endolymphatic system. The deafness and vertigo are characteristic". The American Academy of Ophthalmology and Otolaryngology separated major attacks of vertigo from adjunctive attacks:

> The *vertigo* occurs in well-defined episodes. The *definitive spell* is often prostrating, frequently accompanied by nausea and sometimes vomiting, and persists for a prolonged period of time (20 min to no more than 24 hr). The patient is fully oriented and conscious throughout the spell, and there are no neurologic accompaniments or sequelae to the spell except those referable to the end-organ.
>
> Between *definitive spells* there may be various kinds of *adjunctive spells,* such as motion intolerance, positional vertigo, falling attacks, and momentary ataxia on cornering, but the diagnosis is not tenable unless definitive spells are present with good health between them. During and breifly before a *definitive spell* hearing in the affected ear may decrease and tinnitus increase, remaining so for a variable time after the spell. It is accepted that many patients notice no subjective change in hearing during a spell, and it may rarely occur that hearing increases during a spell.

The variable intensity of these attacks of vertigo, both major and minor, are consistent with Meniere's disease and inconsistent with epilepsy.

Imbalance and dysequilibrium

Episodes of dizziness and vertigo evidently occurred and recurred as "attacks" from 1888 to 1890, which van Gogh alluded to in his letters to Theo and others (1). After the episode of self-mutilation in December 1888, symptoms of imbalance are mentioned even more frequently, and van Gogh refers to his episodes of dizziness as "attacks" which intensified and became more frequent.

To Emile Bernard, a postimpressionist painter, Vincent wrote, "I am writing today, now that my head has gotten *a bit steadier.* I was possibly *afraid to excite it* before being cured" (italics added) (no. B-21, December 1889). This is an excellent description of positional exacerbation of vertigo and dysequilibrium understood by almost all patients who have had this inner ear problem. Vincent's dizziness could come at any time. Stress, anxiety and fear of future attacks exacerbated and/or precipitated other attacks, according to letters to Theo. "Then, the shock was such that it sickened me even to move, and nothing would have pleased me better than never to have woken up again" (no. 592, May 25, 1889). This is a common description from or by patients with chronic, recurrent, positional vertigo and dysequilibrium and associated nausea. Yasuda (3) emphasized that van Gogh wrote that "due to a bad stomach while attacks were persisting, he could not eat"—a fair description of associated vegetative or vagal nausea associated with attacks of vertigo.

Motion intolerance

We note that van Gogh also had motion sickness and/or motion intolerance characteristic of inner ear dysfunction. After traveling to Arles in February 1890, Vincent had an attack with

nausea and had to be brought back by carriage. Dr Peyron wrote that the "attack lasted longer this time and it finally proved that these trips were bad for him!" (no. 672, February 24, 1890). Traveling was a big problem for Vincent. He said: "Traveling beats you up, and above all it disturbs the brain more than can be good for you" (no. 495, June 1888). It is assumed here that "brain" is used in the old context of cerebral congestions and apoplectiform fits. In 1889, he wrote,

> Besides I should not have the courage to begin again outside. I went once, still accompanied, to the village; the mere sight of people and things had such an effect on me that I thought I was going to faint and I felt very ill (no. 594, June 9, 1889).

From St. Remy, he wrote to Wilhelmina in mid February, 1890,

> Tomorrow or the day after I shall try to make the trip to Arles again as a kind of trial, in order to see if I can stand the strain of traveling and of ordinary life without a return of the attacks (no. W 20, February 1890).

Hypothesizing that van Gogh did have an inner ear problem, the commonly associated vagal symptoms of nausea and feeling sick (*malade*) must have been exacerbated by travel, movement, or positional changes as are frequently the case. After several incidents, van Gogh was advised by his physicians to avoid all travel. Travel is rarely, if ever, a factor in exacerbating or provoking a seizure disorder.

It is clear from van Gogh's letters that his "attacks" of vertigo, imbalance, and dizziness were characterized by discrete exacerbations (recurrent attacks lasting days or weeks) and remissions (lasting months) with associated vagal symptoms, weakness and nausea. The duration of the attacks exceeds the *seconds* or *minutes* associated with epileptic seizures. Vincent wrote to Theo in May of 1890 that after the severe attacks he had suffered recently he experienced a long period of calm.

> I have just said the same thing to M. Peyron, and I pointed out to him that such attacks as I have just had have always been followed by three or four months of complete quiet (no. 631, May 1890).

These periods of calm are consistent with the symptom-free intervals or remissions characteristic of Meniere's disease.

Nystagmus and other pathological eye movement disorders

In the context of van Gogh's other, more obvious inner ear problems, his hallucinations of sight, without any description of the hallucinatory content, can be interpreted as nystagmus of inner ear or labyrinthine origin. During and right after an attack, sufferers of Meniere's disease often complain of eye jerks or eye movements called nystagmus, associated with difficulty in focusing. van Gogh, when comparing himself to the epileptics around him said,

> I am again speaking of my condition, so grateful for another thing. I gather from others that during the attacks they have also heard strange sounds and voices as I did and that in their eyes too things seemed to be changing" (no. 592).

This underlined portion may represent a description of nystagmus by an untrained observer. Why else would Dr Peyron have prefaced his ear mutilation report with the statement that van Gogh was, "assailed by auditory and visual hallucinations . . ." unless van Gogh had described something specific to Dr Peyron? van Gogh, who was a very articulate observer with his pen and his brush, certainly would have described very well a true auditory and/or visual hallucination. The fact that no mention is made anywhere, strongly suggests that it was very difficult to describe as it is with Meniere's disease attacks; just as van Gogh described in general his difficulties describing his medical problem to his family. This is in major contradistinction to hallucinatory content associated with seizure disorders. Other visual disturbances or forms of nystagmus like oscillopsia (which would suggest bilateral involvement) could have emanated from the inner ear disorder.

Yasuda (3), who also believed van Gogh suffered from Meniere's disease, and not a mental disease or epilepsy, felt that his actual paintings were affected by the abnormal eye movements (nystagmus/vertical and horizontal rotary, and possibly with oscillopsia), van Gogh described "vertical tremors". "The vertical tremors began attacking me since early this month" (*le tangage, qui a accompagne le commencement de ce mois-ci*) (no. 546 (1)). It is of interest to note that Yasuda (3) felt that van Gogh had active Meniere's disease and that paintings produced before an attack appeared different to those produced after an attack (3). He felt these differences resulted from nystagmus or particularly the oscillopsia.

"Sickness" (malade) and nausea

We believe, as did Yasuda (3), that most of van Gogh's gastrointestinal complaints are nausea and are related to his attacks of *le vertige* and not his alcoholic gastritis, absyinthe toxicity (8), or poor eating habits. This nausea and "sickness" (*malade*) was very distressing to Vincent.

My stomach is very weak, but I hope to be able to get it right; it will take time and patience. In any case I am *really* much better already than in Paris (To Theo, no 478, April 20, 1888, Arles).

I should be afraid of nothing if it wasn't for my cursed health. All the same, I am better than I was in Paris, and if my stomach has become terribly weak, it's a trouble I picked up there, and most likely due to the bad wine which I drank too much of. The wine is just as bad here but I drink very little of it. And so it comes about that by eating hardly any good food and hardly drinking, I am pretty weak (To Theo, no. 480, May 1888, Arles).

Now I myself have nothing wrong with my stomach at the moment, consequently my brain is freer and I hope clearer (To Theo no. 536, September 11, 1889, St. Remy).

We are interpreting his use of "brain" and "stomach" here to mean inner ear abnormalities and associated nausea. This quote was in between two *major attacks* of *le vertige*, July, 1889 and December, 1889.

My health during the intervals, [of the attacks of *le vertige* (added)] and my stomach so much better than before, that *I believe it will still take years before I am quite incapable,* [*incapacitated (added)*] *which I feared in the beginning would be the case immediately* (To Theo, no. 606 I—to "Mother", September, 1889, St. Remy) (italics added).

(Both of these quotes are from the same letter, but separated by paragraphs.)

In the beginning, I was so dejected, that I had no desire even to see my friends again and to work, and now the desire for these two things is stirring, and then there is the fact that *ones appetite and health are perfect during the intervals.* [The symptom-free periods between attacks of vertigo are characteristic of Meniere's disease (added)] (To Theo, no. 606 I—to "Mother.", September, 1889, St. Remy (italics added).

Tinnitus

Tinnitus is a ringing or buzzing noise subjectively perceived to be in the ear. van Gogh never used the word tinnitus to describe ear noises. The word was not in common use at the time. Prosper Meniere did not use the word tinnitus either. van Gogh said he heard "strange *sounds* and voices". Meniere described the problem similarly, as "noises in or of the ear". The description of ear noises by Meniere and van Gogh, who were near contemporaries, was similar. van Gogh's statement may be an 1880's patient's description of tinnitus.

THOUGHTS ON WHY VAN GOGH CUT OFF HIS EAR

Historians and others have speculated as to why van Gogh partially severed his left ear and sent it to a prostitute (Rachel) after an argument with Gauguin. Dr Felix Rey, a physician who worked at the city hospital in the town of Arles where van Gogh lived at the time, was the first physician to see van Gogh after the incident at 11:30 p.m. on December 23, 1888. Dr Peyron wrote that van Gogh returned to his room from the brothel and there, "assailed by auditory

hallucinations, multilated himself by cutting off his ear" (5). The following week, the local newspaper of Arles published an account of the incident on December 30, 1888.

It is possible that van Gogh's tinnitus became so intolerable that he felt he could alleviate the "auditory hallucinations" only by eliminating their apparent source. We have encountered patients who have said that tinnitus and/or aural pressure were so severe that they would "cut off their ears" or "poke a hole (into their ear) with an ice pick" if this would free them of their symptoms. It is possible that van Gogh fully manifested these feelings, but this is not our hypothesis.

One of many explanations as to why van Gogh cut off his ear is offered by a modern psychologist W. K. Runyan who wrote in 1981:

> It is unlikely that van Gogh experienced frightening auditory hallucinations during his psychotic attack similar to those he experienced in other attacks. Afterward while in the sanitarium, he wrote that other patients heard strange sounds and voices as he had and speculated in one case that this was probably due to a disease of nerves in the ear. *Thus, in a psychotic state, van Gogh could have felt that his own ear was diseased and cut it off to silence the disturbing sounds* (italics added) (17).

Runyan probably derived this basic information from letter no. 592, May 25, 1889, excerpted above.

Yasuda (3) also speculated that van Gogh cut through his ear lobe because he "was plagued by Meniere's disease and he cut it off in trying to escape from distressing symptoms of aural stuffiness, tinnitus and recruitment accompanying attacks". Yasuda (3) felt this explanation was quite acceptable and "well understood". Yasuda (3) further speculated on the exact anatomical, technical method van Gogh used to cut off part of his ear (3).

van Gogh voluntarily committed himself to the lunatic asylum at St. Remy (St. Paul de Mausole) after 80 people from Arles signed a petition to have him committed. It should be noted that in the 1880's epilepsy was considered a form of insanity. This concept of epileptoid psychosis is an old 19th century concept and needs to be understood as such, but purged in this context (18). He put himself under the care of Dr Peyron in an attempt to prevent further "attacks" and to be under professional care if they did recur. When Dr Peyron admitted van Gogh to the lunatic asylum (for epileptics) at St. Remy, he wrote in the register:

> The undersigned, director of the asylum of Saint-Remy, certifies that van Gogh (Vincent), age thirty-six, born in Holland and presently domiciled in Arles, having been treated at the hospital in that town, is suffering from acute mania with hallucinations of sight and hearing which have caused him to mutilate himself by cutting off his ear. At present he seems to have recovered his reason, but he does not feel that he possesses the strength and the courage to live independently and has voluntarily asked to be admitted to this institution. As a result of the preceding it is my opinion that M. van Gogh is subject to epileptic fits at very infrequent intervals, and that it is advisable to keep him under prolonged observation in this establishment (M. Peyron, May 9, 1889) (19).

Fullness and pressure and head discomfort

In his letters, van Gogh confirmed that his affliction was characterized by attacks of indefinite duration preceded by what could be interpreted as fullness or pressure in the head and followed by "torpor", as suggested by the following quote to his sister (italics added):

> . . . had the profound feeling at times that his mind was a turbid pool, but this was a disease . . . *I am unable to describe exactly what is the matter with me;* now and then there are horrible fits of anxiety apparently without cause or *otherwise a feeling of emptiness or fatigue in the head* . . . (W no. 11, April 10, 1889) (italics added).

Previously he wrote to Theo:

> My brain is still feeling tired and dried up, but this week, I am feeling better than during the previous fortnight (no. 558 B, October, 1888).

In his early experiences with the attacks and his disease he wrote to Theo:

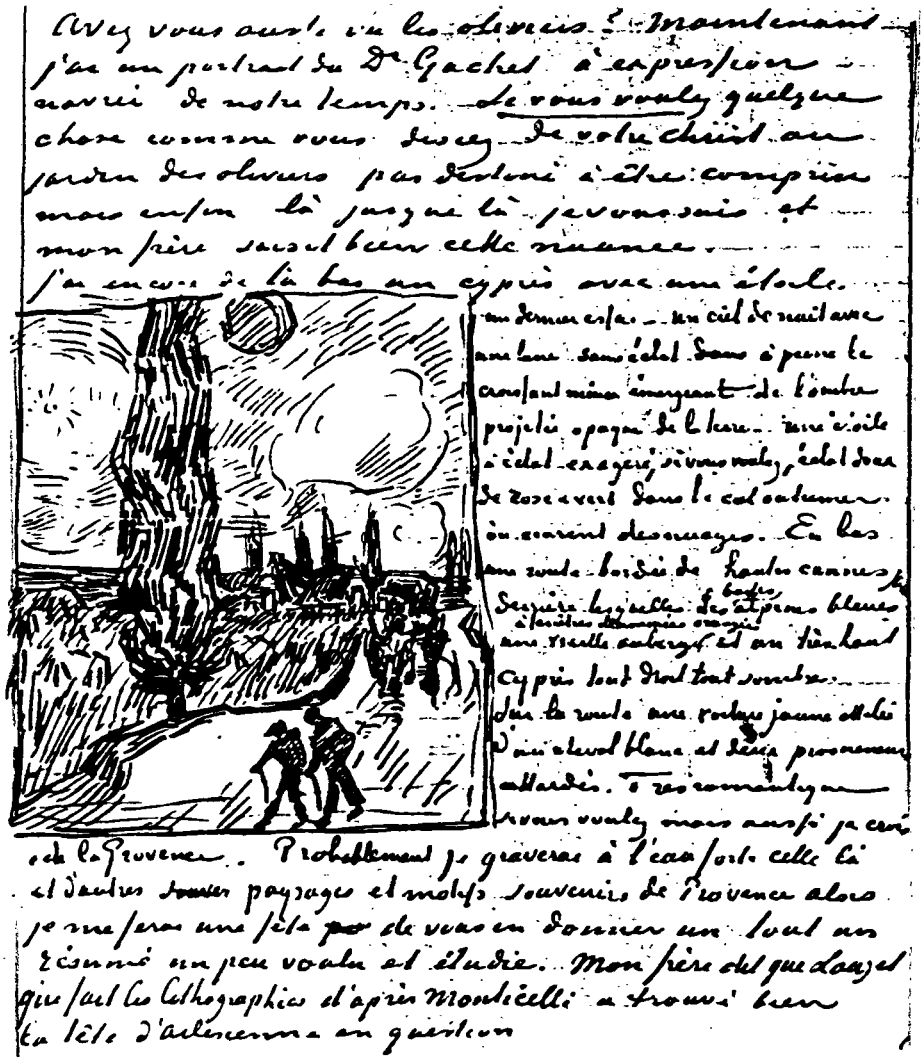

Fig. 1. In an unfinished letter (643, June 1890) van Gogh describes to his "dear friend Gauguin" the bad effect of noise on his head—several months before his suicide. In that letter, a striking sketch is described by van Gogh: "I still have a cypress with a star from down there, a last attempt—a night shy with a moon without radiance, the slender crescent barely emerging from the opaque shadow cast by the earth—one star with an exaggerated brilliance, if you like, a soft brilliance of pink and green in the ultramarine sky, across which some clouds are hurrying. Below, a road bordered with tall yellow canes, behind these the blue *Basses Alpes*, an old inn with yellow lighted windows, and a very tall cypress, very straight, very somber. On the road a yellow cart with a white horse in harness, and two late wayfarers. Very romantic, if you like, but also *Provence*, I think".

It astonishes me already when I compare my condition today with what it was a month ago. Before that, I knew well enough that one could fracture one's legs and arms and recover afterward, but I did not know that you could fracture the brain in your head and recover from that too (no. 574, January 28, 1888).

van Gogh complained of vague head discomfort. van Gogh had great difficulty describing the subtleties of his disease and attacks to his family and friends despite his obvious intelligence and excellent articulateness. "I am unable to describe exactly what is the matter with me" (W.

no. 11, April 10, 1889). van Gogh's description of head discomfort is not unlike contemporary patients, who often describe aural pressure and fullness as involving the entire head or a sense of emptiness or vagueness in their head or ears.

Auditory and cochlear symptoms: noise intolerance, recruitment and Tullio phenomenon

Loud noises actually producing or precipitating dizziness, is called a Tullio phenomenon (20), a rare problem in patients with inner ear dysfunction and hydrops from many etiologies. People with inner ear disorders are often hypersensitive or intolerant of increased noise levels. Characteristically these patients have difficulty with small increments of sound in that they have an abnormally disproportionate perception of an increase in loudness called recruitment. Noise can produce an adverse effect within an already damaged inner ear causing dysequilibrium or spatial disorientation.

In a letter to "his dear friend Gauguin" in May of 1890, van Gogh wrote: "I stayed in Paris only three days and the noise, etc., of Paris had such a bad effect on me that I thought it wise for my head's sake to fly to the country . . ." (no. 643, June, 1890) (Fig. 1). In Paris he wrote, "In Paris I felt very strongly that all the noise there was not for me" "(no. 635, May, 1890). Later he wrote, "as for myself, I am still afraid of the noise and bustle of Paris"(no. W-21, early June, 1890).

Noise may have irritated van Gogh's sensitive, already fragile and damaged inner ear. Noise-induced discomfort, such as that noted above, suggests clinical recruitment. This is seen in the Tullio phenomenon (20), a *noise-induced* dizzy spell of inner ear origin. This fits van Gogh's description either as a partial (minor) or full blown (major) vertiginous attack developing soon after the onset of these cochlear symptoms. Noise evidently affected van Gogh's illness, or at least he perceived that it did. The Tullio phenomenon, a noise-induced dizzy spell of inner ear origin, would certainly fit van Gogh's descriptions. Attacks could develop soon after the onset of these cochlear symptoms.

If noise did not produce a full blown attack in van Gogh, it may have irritated a sensitive, already fragile and damaged inner ear. The fact that van Gogh preferred the calm of the country to the noise and bustle of Paris does not necessarily mean he was afflicted by aural, inner ear disease. But if he did have inner ear disease, he may have developed a preference for the quiet of the countryside because he was less symptomatic there than in the city. The following is an unsolicited, recent letter from a patient of the senior author, (IKA) with inner ear disorder:

> . . . because sound is still very irritating to my right ear. Highway noise is especially painful; I have not been out of town in the past few weeks because of this. All sound, however, bothers the ear—I try to stay indoors in a quiet environment as much as possible, hoping this and time might help.

The Tullio phenomenon may not have produced a major attack of *le vertige* ("violent attack"), but may have produced minor attacks of dysequilibrium which were disquieting to van Gogh. The Tullio phenomenon itself is somewhat uncommon in my (IKA) twenty years' experience with dizzy patients, but it certainly occurs. Noise may not have been the source of all of van Gogh's medical problems, but it could have easily worsened an already damaged and fragile auditory and vestibular system.

Fluctuating sensorineural hearing loss

Although van Gogh never specifically stated he had a permanent hearing loss, he was presumably aware of the ear as the site of his ear noises and tinnitus as he made the following observation in relation to "the strange sounds and voices [I] heard . . . during attacks . . . it was my sight as well as my hearing . . . "(no. 592, May 25, 1889) (Fig. 2). In more detail:

> I am, again speaking of my own condition, so grateful for another thing. I gather from others that during their attacks they have also heard strange sounds and voices as I did, and that in their eyes too things seemed

to be changing. And that lessens the horror that I retained at first of the attacks I have had, and which when it comes to you unaware, cannot but frighten you beyond measure. Once you know that it is part of the disease, you can take it like anything else. If I had not seen other lunatics close up, I should not have been able to free myself from dwelling on it constantly. For the anguish and suffering are no joke once you are caught by an attack. Most epileptics bite their tongue and injure themselves. Rey told me that he had seen a case where someone had mutilated his own ear, as I did, and I think I heard a doctor here say, when he came to see me with director, that he had seen it before. I really think that once you know what it is, once you are conscious of your condition, and of being subject to attacks, then you can do something yourself to prevent your being taken unawares by the suffering and terror. Now that it has gone on decreasing for five months, I have good hope of getting over it, or at least of not having such violent attacks. There is someone here who has been shouting and talking like me all the time, for a fortnight, he thinks he hears voices and words in the echoes of the corridors, probably because the nerves of the ear are diseased and too sensitive, and in my case it was my sight as well as my hearing, which according to what *Rey told me one day is usual in the beginning of epilepsy* (no. 592, May 25, 1889, St. Remy) (Fig. 2) (italics added).

It is remarkable that van Gogh was aware of the possible pathology of his condition ("because the nerves of the ear are diseased and too sensitive"). "Too sensitive" would indicate his awareness of noise intolerance, possibly a Tullio phenomenon. One wonders if van Gogh may have understood that dizziness and vertigo could also come from the inner ear as might "the strange sounds and noises" (tinnitus). This level of awareness is an excellent clinical description of Meniere's symptom complex, with its symptom free periods, for a lay person in 1889.

COMMENT

van Gogh was evidently aware that he had some type of hearing problem not necessarily a fixed hearing loss, when he in effect said, "my hearing" [changes during the violent attacks] and the "nerves of the ear are diseased and too sensitive" (see letter no. 592 above). This hearing loss may have been clinically significant only during or right after attacks, as it can be in patients with early Meniere's disease. Most patients, especially early in the course of the disease, are much more troubled by "violent" attacks of vertigo than a fluctuating hearing loss (even if the loss is severe). This is particularly true if the hearing loss only effects one ear and the patient's other ear has normal hearing.

van Gogh did not specifically say, "I have a hearing loss in my ear". Most patients in the early stages of Meniere's disease are very troubled by the unexpected attacks of vertigo, not by any transient hearing loss. This is because *early* in the course of the disease (as we theorize was van Gogh's situation) most patients have a transient hearing loss during and after the attack. They are usually so distressed by the unexpected attack of vertigo *and* imbalance *and* ataxia *and* weakness *and* diaphoresis *and* nausea *and* often vomiting that they do not notice or care about any hearing loss. The hearing loss usually fully recovers in the early stages so that many patients rarely report it unless specifically asked. It is not until the disease progresses that with subsequent attacks of vertigo, some post attack hearing loss persists.

The American Academy of Ophthalmology and Otolaryngology (AAOO) in 1972 (15) defined a classical form of Meniere's disease with both hearing loss and vertigo. The Academy also recognized *vestibular* Meniere's disease with its characteristic attacks of vertigo, without hearing loss (15) as well as a form of *cochlear* Meniere's disease with its characteristic fluctuating, sensorineural hearing loss without attacks of vertigo (15). van Gogh differentiated between major attacks (15) and minor attacks or "adjunctive spells" (15) discussed under vertigo and dysequilibrium in a manner consistent with these American Academy of Ophthalmology and Otolaryngology (AAOO) 1972 criteria (15).

On May 16, 1890, almost exactly one year after admission to St. Remy, van Gogh left the asylum. In the register, Dr Peyron wrote.

The patient seemed calm most of the time. He had several attacks during his stay in the establishment . . . *his fit broke out after a trip to Arles and lasted almost two months.* Between these attacks the patient is perfectly calm and devotes himself to his painting (21) (italics added).

It is important to note that Vincent's "fit" that "lasted almost two months" is much too long to be a convulsive seizure disorder or status epilepticus. In the margin Peyron wrote, "Cured" (21). Unfortunately, as subsequent events were to confirm, van Gogh was not cured.

EPILEPSY VS. MENIERE'S DISEASE—OR—THE STATE OF THE ART OF OTOLOGY AND NEUROLOGY IN THE 1880s

Epilepsy is an ancient disease (22). Hippocratic writings (22) "on the sacred disease" from about 400 B.C. is the first monograph on epilepsy that we possess and attacks epilepsy as being sacred. Rather, the author says, epilepsy's alleged divine character is only a shelter for ignorance and fraudulent practices by wizards, magicians and charlatans (22).

What was the state of knowledge in 1861 when Prosper Meniere made his critical observations regarding epilepsy, fits and apoplectic seizures (versus inner ear disorders)? From the title of Meniere's first paper, "A Report on Lesions of the Inner Ear Giving Rise to Symptoms of Cerebral Congestion of Apoplectiform Type", it is apparent that apoplexy or apoplectiform "fits" or seizures could easily be confused in 1861 with inner ear dysfunction. We now know there is no common underlying basis for these diverse disorders, yet, in van Gogh's time, the nomenclature encompassed both epilepsy and inner ear disease as well as a host of other disorders. The fact that Dr Peyron of St. Remy diagnosed van Gogh as having epilepsy in 1889, does not mean the diagnosis was correct for a medical discussion in 1989. We would like to think there has been some progress in diagnosis and treatment and understanding of these medical problems in the last 100 years.

Atkinson a noted scholar of Prosper Meniere's work and the state of medicine and neurology in the 1860's, provides us with these pertinent observations:

It is difficult for us, the medical descendants of Meniere, Trousseau and their colleagues, for whom neurological disorders have largely been decoded and classified, even if much of their etiology and pathology still eludes us, to realize the chaos which prevailed a hundred years ago. Charcot, who was to start the sorting-out process, would not be appointed to the Salpetriere until the year following the events we are discussing, and the halcyon years were still far in the future. Meantime, apoplectiform cerebral congestion served as a ragbag into which a great variety of neurological scraps were thrown. It was one of these scraps that Meniere extracted, while Trousseau postulated and demonstrated that there were many others, and in the discussion Bouillaud, a well-known pathologist of the time, raised a lone liberal voice in support. This was the beginning of the long, hard row which was to be hoed (2).

M. Armand Trousseau, a famous neurologist, was Prosper Meniere's main supporter and they saw patients in consultation together. He was the physician-in-chief of the Hotel-Dieu and an outstanding clinician of the time and read a paper in 1861 entitled, "Concerning apoplectiform cerebral congestion in its relation to epilepsy" (4). The essence of this paper was that a number of different conditions were included under the general diagnosis "apoplectiform cerebral congestion". Trousseau cited many examples. He also mentioned among this diagnostic group, Meniere's cases presented to the French Academy the week before. Trousseau (4) said:

M. Dr. Meniere has observed for a long time a large number of patients who are suddenly taken with vertigo, nausea, and even vomiting, who fall to the ground after walking like drunks and who get up with difficulty, remaining pale, covered with cold sweat, almost lympothimic, and these accidents recur a great number of times. The first attacks were considered cerebral congestion for which they were treated vigorously . . . (4)

In the immense majority of cases, patients affected with these cerebral problems, soon perceive noises in the ear, often the hearing even becomes weak and the buzzing brings people who wish to be rid of this

inconvenience to the doctor at the institute for deaf-mutes in Paris. It is easy to prove then that one ear, often even both, are singularly weakened, and M. Meniere has collected hundreds of observations establishing that the supposed cerebral lesions are really lesions of the auditory apparatus. He has conducted this research with extreme care, and he has succeeded in establishing that the point of origin of these phenomena is in the internal ear . . . It will suffice us to say the majority of accidents so poorly designated under the name "apoplectiform cerebral congestion" have their origin in the semi-circular canals, that lesions of these organs determine vertigo, sympathetic vomiting, cause the limbs to become useless, the sudden loss of consciousness and, in a word, that many supposed cerebral lesions belong exclusively to the auditory organ (4).

Meniere concluded by remarking that "his own cases showed no tendency to epilepsy" (2). In his last paper, of June 15, 1861, he again implied, while not actually expressing, his doubt that apoplectiform cerebral congestion commonly leads to epilepsy. Meniere (2) felt that Trousseau's cases (4) showed a marked analogy to his cases.

Understanding of epilepsy's character and pathophysiology have continued through the 19th century and even to present day. Nonetheless, it is of interest, and germaine to our argument that the great French neurologist, J. M. Charcot, in the 1870s clearly differentiated epilepsy from Meniere's disease (23). While still the director of the Salpetriere, Charcot published a series of lectures on the diseases of the nervous system (23). In lectures 17 and 18 titled Meniere's vertigo (*vertigo ab aura laesa*), Charcot notes the difficulty in contemporary medical practice of the 1870s differentiating Meniere's vertigo from an epileptic disorder.

Very important works have been published concerning the symptomatology of the vertigo *ab aura laesa.* As examples, I will mention the communication made to the Academy of Medicine June 8, 1861 by Meniere, who, as you are aware, was undoubtedly the first in the field . . .

Nevertheless, I believe that I might assert that in spite of these works a knowledge of the pathological condition in question has not yet entered as it ought *into everyday practice.* Although cases of Meniere's disease are not rare, far otherwise, at least in civil practice *they are nearly almost always misconstrued, connected as they are with more common disorders* as, amongst others, with apoplectiform cerebral congestion or apoplectic stroke, epileptic petit mal, or again and chiefly with gastric vertigo. I have for my own part often witnessed mistakes of this kind; as an example, I will mention the case of a patient whom I have attended and who, having fallen on the Place de la Bourse, owing to a fit of labyrinthic vertigo, had been treated by blood letting. The real character of the disease was not recognized until very late, at a time when the fits, which were of great intensity, had been already very frequently reproduced. Complete absolute deafness of both ears put an end to all the symptoms. I might also cite the case of a young American lady who had for many years been considered an epileptic and consequently treated without indeed the least improvement by large doses of bromide of potassium. It would be easy for me to multiply examples.

The error in some cases is, to a certain point, justified by the difficulties, often very serious ones, which may stand in the way of the diagnosis (23).

Charcot then goes on to list the symptoms of Meniere's disease, charging his colleagues to memorize this disease presentation so that they should not continue to misdiagnose Meniere's disease as epilepsy, and avoid the pitfalls of misdiagnosis (23).

In spite of Charcot's and other Parisienne neurologists' knowledge of Meniere's disease in the 1870s, van Gogh was still misdiagnosed as being an epileptic, in the 1880s. It is interesting to note that a major treatise on epilepsy by Spratling (18) at the turn of the century was still making some of the same diagnostic mistakes Charcot warned his students about above. Spratling (18) was hopeful, however, that the future would bring a better understanding to the braodbased "wastebasket" concept and definitions of epilepsy: "true epilepsy", "epileptiform" and "epileptoid" variants. Epileptoid psychosis (latent mental epilepsy) is very old, 19th century "wastebasket terminology"—not in current usage today. The fact that they used "epileptoid" (epilepsy-like) to diagnose van Gogh rather than "epilepsy" means that a definite diagnosis of epilepsy was lacking even in the mind of the doctor who made that diagnosis at the time.

Spratling (18) was quite aware in 1904 that epilepsy was a wastebasket term for a vast array of central (and peripheral) nervous system disorders. Spratling, as a turn of the 19th century

neurologist had this view of vertigo and Meniere's disease, which he tried to differentiate from "lighter forms of epilepsy". Still in 1904, Meniere's disease was being confused with epilepsy, so is it any wonder that van Goghs Meniere's disease was misdiagnosed as epilepsy?

Vertigo.—Occasionally difficulty may be experienced in diagnosing aural or auditory vertigo, when severe in form (Meniere's disease), from lighter forms of epilepsy.

As a rule, the onset of aural vertigo is sudden, but it may be slow in passing away, whereas in epilepsy the symptoms disappear at once. A patient may suffer from both aural vertigo and epilepsy (Gowers).* In some cases in which there is considerable brain instability and the origin of the disease labyrinthine, the attacks may so closely simulate those of true epilepsy, even to the loss of consciousness, as to create much confusion (18).

If these same diagnostic mistakes and conceptual errors were still being made in 1904 (18), is it any wonder that van Gogh was misdiagnosed as an epileptic in the French provinces in 1889?

THE DIAGNOSIS OF VAN GOGH'S EPILEPSY IN 1889

van Gogh has most often been cited as having epilepsy. This is the most commonly accepted or prevalent diagnosis in art history literature to this day (5, 16, 24). The more recent medical literature suggests several other diagnoses: glaucoma (6), digitalis toxicity (7), and most recently, absyinthe (Thujone) toxicity (8).

Epilepsy was Dr Peyron's diagnosis on May 8, 1889. "As far as I can make out, the doctor here is inclined to consider that I have had some sort of epileptic attack. But I did not ask him about it" (no. 591, May 8, 1889). Dr Peyron wrote in the register, "M. van Gogh is subject to epileptic fits at very infrequent intervals". van Gogh seems to have accepted that contemporary diagnosis and its medical implications because he was given no alternative by his physician. We have demonstrated that van Gogh's attacks, as described in his letters and enumerated above, are diagnostic of Meniere's disease and not epilepsy.

In van Gogh's day, any episodic disorder involving the central nervous system was commonly diagnosed as "fits" or "epilepsy", or "cerebral congestion-apoplectic type". Meniere was the first one to differentiate inner ear disorders from the general category of apoplectiform seizures or "fits" of the brain. We are convinced that the generic diagnosis of epilepsy for "dizziness and attacks" was the diagnosis van Gogh heard from his doctors, and he, naturally, accepted it. The doctors outside of Paris in the provinces may or may not have been aware of Meniere's observation in 1861, but there is no doubt that nothing in the physicians' descriptions of van Gogh's affliction (except for the use of the diagnostic term "epileptic fits"), warrants a diagnosis of epilepsy or convulsive seizure disorders as we now define them.

van Gogh described himself as "an epileptic", but we believe he did so because he was told by Drs Rey and Peyron that he was an epileptic. van Gogh also stated that the nuns and attendants at the asylum referred to him as an epileptic. On the other hand, he observed that his symptoms and attacks did not match those of patients with classical convulsive seizure disorders. Even his doctors did not consider his symptoms typical epilepsy. "Since the doctor was inclined to consider what I have as some sort of epileptic attack" (to Theo, no. 591). The implication is that the diagnosis was less than positive and van Gogh's acceptance less than complete. Apparently, his case was not typical of epilepsy, even in the 1880's. Possibly van Gogh thought, as was suggested by Dr Rey, that the *more classical findings of epilepsy would eventually manifest themselves later* in the course of the disease. "According to what Rey told

* The senior author has, as recently as 1976 seen patients referred with a diagnosis of vertiginous epilepsy. When the vertigo and hydrops were (surgically) corrected and eliminated the patient still had a seizure disorder requiring medication to control the seizures.

me one day [this] is usual in the beginning of epilepsy" (no. 592) (Fig. 2). The only positive comparison van Gogh makes between his own case and that of the epileptics around him is: "I am, again speaking of my condition, so grateful for another thing. I gather from others that during their attacks they have also heard strange sounds and voices as I did and that in their eyes too things seem to be changing" (no. 592).

Later in the same letter, van Gogh states "most epileptics bite their tongues and injure themselves", but he never says that he has experienced anything similar. These injuries an epileptic sustains are the result of *involuntary* non-directed movements accompanying focal motor or grand mal seizures. Van Gogh's directed self mutilation in which he cut off part of his ear, must be interpreted as a complex, intentional or voluntary action and not the result of random thrashing while shaving, for example. Despite this, the doctors of his time suggested that his self-inflicted mutilation (voluntary) was of similar clinical significance as biting one's tongue (involuntary) which occurs during the clonic phase initiating a major convulsion (or "injuring oneself" (from thrashing about during an epileptic fit). van Gogh's descriptions of his "attacks" of "vertige" are also *not* consistent with any minor convulsive seizure disorders.

By the medical standards of the late 18th century and early 19th century, van Gogh's symptoms may have been considered epileptiform. However, by the late 19th century, by the standards of French neurology and psychiatry, van Gogh's symptoms could no longer be considered a manifestation of epilepsy. That he was diagnosed as an epileptic reflects a lack of dissemination of then current and state of the art medical knowledge from Paris to the smaller cities in the provinces. As noted earlier, it is clear that Charcot, a contemporary of van Gogh, was aware of Meniere's disease and its common confusion with epilepsy, but unfortunately Charcot never saw van Gogh as a patient.

Evaluating van Gogh's letters and his description of his medical problems according to 1980s concepts and standards, we believe that van Gogh definitely did not suffer from epilepsy. His letters give no evidence that he suffered from any epileptic or ictal events. In accordance with this, we do not believe that he suffered from any interictal epileptic character disorder or psychosis. Scrutinizing van Gogh's description of his own disease, it is clear that nowhere in his 796 extant letters does he describe a characteristic convulsive seizure of the grand mal type (no aura, no clonic-tonic movements), no bitten tongue or post seizure oral bleeding, or muscle fatigue; no involuntary self-inflicted injuries from muscle flailing. There is no description of a post-ictal state. As noted earlier, we believe his external ear partial amputation was a voluntary self-mutilation. Nowhere does van Gogh describe any post-ictal state. In short, his extensive collection of letters reflect no symptomatology characteristic of a seizure disorder. Dr Gachet, with whom he spent a great deal of time in the last months of his life, who was described as a "nerve doctor", made a diagnosis of chronic sunstroke and turpentine poisoning, possibly the Thujone connection (8) but not epilepsy! Why would Dr Gachet not have confirmed a diagnosis of epilepsy? Apparently Dr Rey thought his symptoms were the early manifestations of a future seizure disorder. In letter no. 592 of May 25, 1889, van Gogh said:

> But all joking aside, the fear of madness is leaving me to a great extent, as I see at close quarters those who are affected by it (epilepsy) in the same way *I may very easily be in the future* (no. 592, May 25, 1889).

It is important to note that van Gogh did not think he had the same problem as those epileptics *around him*, at St. Remy. But he was very concerned that his medical illness might develop or progress in the future to become something similar to epilepsy.

On May 16, 1890, almost exactly one year after he entered, van Gogh left the asylum at Saint-Remy. In the register, Dr Peyron wrote,

> The patient seemed calm most of the time. He had several attacks during his stay in the establishment . . . his fit broke out *after a trip* to Arles and lasted almost two months. Between these attacks the patient is perfectly calm and devotes himself to his painting (21) (italics added).

It is important to note that Vincent's "fit" that "lasted almost two months" cannot be a convulsive seizure disorder (like status epilepticus). They were probably what we commonly see as a cluster of attacks of positional dysequilibrium (adjunctive spells) interspersed with major attacks of vertigo; the combination of these major and minor spells can last weeks or months with minimal amount of symptom free time. In the margin Peyron wrote, "Cured" (21). Unfortunately, as subsequent events were to confirm, van Gogh was not cured.

SUMMARY OF OUR HYPOTHESES REGARDING THE DIAGNOSIS OF MENIERE'S DISEASE AND NOT EPILEPSY

It is our hypothesis that van Gogh had a medical problem that was noted in 1888, was characterized by some sort of "attacks" of Vertigo (Vertige) (both "major" and "minor") in *discrete,* often *prolonged, recurrent* or *cluster type episodes,* punctuated by *months of symptom free intervals.* van Gogh's primary medical problem was Meniere's disease, an inner ear disorder, the underlying pathophysiology of which is idiopathic, endolymphatic hydrops. This can result from numerous disease states, but epilepsy is not one of them! van Gogh was thought to have syphilis, and syphilis can cause endolymphatic hydrops.

van Gogh's attacks of vertigo and dizziness (*vertige*), positional imbalance or dysequilibrium, sickness and nausea, and the cochlear symptoms of tinnitus, aural pressure and hearing abnormalities with noise intolerance came unexpectedly and apparently distressed Vincent greatly. This chronic yet episodic inner ear condition, characterized by symptomatic but discrete or cluster like attacks of *vertige* and symptom-free periods of varying lengths, affected his day to day behavior and his outlook on life. As his recurrent malady evolved into a debilitating sickness, he struggled bravely to maintain control over his life, his temperament and his art.

Toward the end of his tormented life van Gogh was plagued by a recurrent and hopeless (incurable) illness

> I must also say that M. Peyron does not give me much hope for the future and I think this right, he makes me realize that *everything* is doubtful, that one can be sure of nothing beforehand. *I myself expect it* [the attacks of *le vertige* (added)] *to return . . . and that things may continue this way for a long time.* (1) (no. 605, September 10, 1889, St. Remy) (italics added).

Between 1888 and his death in 1890, the "attacks" of *le vertige* as he referred to them, grew more intense and more frequent (1). Despairing at his discomfort and dysfunction, and with no hope of recovery, he shot himself in the abdomen and died several days later. We believe that van Gogh's inner ear symptoms led to significant despondency, culminating in his self-mutilation and suicide.

Prosper Meniere in 1861, was significantly confounded by the diagnostic limitations and semantic problems he encountered in delineating intermittent inner ear disease and distinguishing it from intermittent central nervous system disease (fits, apoplectiform cerebral congestion, epilepsy, and seizure disorders). But he was optimistic that future physicians would not have to face the same limitations:

> But the field is open. From those who come later one will undoubtedly derive new light. Each will say what he has seen, what he has come across, what specific points differentiate this cerebral congestion from that. One will establish categories, one will avoid, we hope, disputes over words in order to concentrate on fundamentals. It seems to us that there is not in the thesis proposed by M. Trousseau the slightest allusion to a medical doctrine of any sort. We wish to see there only what is there in actuality, that is to say a loyal appeal to all men who work, who search, who force themselves to see clearly and to make a few forward steps along a road leading to a twofold objective, the progress of science and the good of humanity (4).

If in 1990 we cannot adequately resolve the diagnostic limitations and semantic problems surrounding Vincent van Gogh, then Prosper Meniere may have been unduly optimistic.

Detailed retrospective analyses over the last thirty years by neurologists, psychologists, and psychiatrists, moreover, have brought to light many inconsistencies between the descriptions of van Gogh's illness and the characteristic symptoms of epilepsy and convulsive seizure disorders, (induced or precipitated by a Thujone (8) or not) reinforcing our conclusion that van Gogh's recurrent medical symptoms were not those of an epileptic, but a recurrent inner ear disorder (Meniere's disease).

On the basis of Vincent van Gogh's written statements, we have demonstrated that he most probably suffered from inner ear dysfunction, endolymphatic hydrops, and Meniere's disease with its characteristic exacerbations and remissions. His "auditory hallucinations" may have been tinnitus associated with a temporary downward fluctuation in hearing, sound distortion, noise sensitivity, Tullio phenomenon, and recruitment. His visual hallucinations may have been nystagmus or oscillopsia. Despair caused by the suffering and disability associated with unanticipated violent attacks of vertigo and imbalance, aural fullness, pressure, tinnitus and head discomfort may have been the reasons he mutilated his ear. Attacks of recurrent vertigo and the minor cochlear symptoms of noise intolerance and recruitment probably contributed to van Gogh's feeling of helplessness about the inexorable progression of his disease and probably precipitated his suicide. van Gogh's own written statements though subjective, are compelling evidence for this diagnosis of Meniere's disease. A diagnosis of epilepsy is inconsistent with his written statements (1) and is based on 19th century misconceptions and misdiagnosis.

DISCUSSION

The mid 19th century, in which van Gogh lived, painted, "went mad", and died was a time of great advances in medical sciences and the understanding of epilepsy. Jean Charcot, the great French neurologist, was aware of the current medical advances such as those introduced by Prosper Meniere and Armand Trousseau in 1861, as well as those introduced abroad in England, America and elsewhere. Unfortunately, as Charcot himself describes, the dissemination of new advances into the common medical practices outside the major population centers was slow to evolve. Thus, van Gogh was a tragic victim of Meniere's disease with resultant, severe psychological sequelae and eventual suicide. van Gogh was misdiagnosed, left untreated and has been given to history as a victim of epilepsy. Perhaps had he remained in Paris, Vincent might have come under the care of Dr Charcot and his quinine sulfate treatment for Meniere's disease (23). But then, would he ever have gotten to Arles, St. Remy or Auvers? We can only speculate.

The authors themselves have seen many patients suffering from Meniere's disease who thought they were losing their minds. Plagued by bothersome symptoms of vertigo, imbalance and dizziness, and auditory symptoms of tinnitus and noise intolerance, the patients were diagnosed as "hysterical" since they had had no obvious ear injury or disease to guide their physician to a proper diagnosis.

SPECULATION ON THE EFFECTS OF INNER EAR DYSFUNCTION AND ENDOLYMPHATIC HYDROPS ON VAN GOGH'S PAINTING

van Gogh was preoccupied with his illness toward the end of his life, and he was painfully aware of the effects his illness had on his art. "Oh, if I could have worked without this accursed disease—what things I might have done, isolated from others, following what the country said to me. But there, this journey is over and done with" (no. 630, May, 1890, Auvers, two months before his suicide). In a letter written in December of 1889 to Emile Bernard, his peer and art critic, van Gogh wrote: "I still have many things to say to you, but although I am writing

today, now that my head has gotten a bit steadier, I was previously afraid to excite it before being cured" (no. B21, December 1889). "During these attacks . . . I feel a coward before the pain and suffering . . . I also feel frightened faced with the suffering of these attacks. It is the work that keeps me well balanced. I cannot live since I have this dizziness (vertigo) so often" (no. 605, September 10, 1889). van Gogh feared that he would eventually lose his ability to work, ". . . a more violent attack may forever destroy my power to paint" (no. 605, September 10, 1889).

van Gogh wrote to Wilhelmina that he suspected his illness was incurable:

> I must also say that M. Peyron does not give me much hope for the future and I think this right, he makes me realize that *everything* is doubtful, that one can be sure of nothing before hand. I myself expect it [the attacks of *le vertige* (added)] to return . . . and that things may continue this way for a long time (no. 605, September 10, 1889, St. Remy).

This placed him under tremendous strain: "The more ugly, old, vicious, ill, poor I get, the more I want to take my revenge by producing a brilliant color, well arranged, resplendent" (W no. 7, September 1888). This may well represent van Gogh's way of compensating for his increasing despair at the debilitating effects of his "attacks" and his recurrent disease. He wrote to Theo frequently, as if to distract his mind from his illness and seek reassurance that there might be ways to restore his health.

During the times of the development and progressions of his inner ear symptoms with major and minor attacks, van Gogh began to paint a canvas or two a day, almost like keeping a diary. During this period, he completed sixty paintings in two months. Between February 1888 and May 1889 he produced 200 paintings, 200 drawings and water colors, and 100 letters (1). It would be interesting to speculate further on whether or not van Gogh would have been as prolific an artist if he had not had Meniere's disease or if his Meniere's disease could have been successfully treated. Would van Gogh have been prompted to such a frenzy of artistic activity if he did not fear his progressive Meniere's disease so much? Did the Meniere's disease—or the fear of its effects take away usual inhibitions and unleash his magnificent creative potential to its maximum?

Yasuda (3) who also believed van Gogh suffered from Meniere's disease, and not a mental disease or epilepsy, felt that his actual paintings were effected by the abnormal eye movements (nystagmus/vertical and horizontal rotary, and possibly with oscillopsia), he described "vertical tremors". "The vertical tremors began attacking me since early this month" (*le tangage, qui a accompagne le commencement de ce mois-ci*) (no. 546) (1). There is no question that his medical illness as he described it to his family and friends must have effected his art and his disposition, as well as his day to day activites. A more complete analysis of these aspects is beyond the scope of this special communication.

We do not mean to suggest that a diagnosis of Meniere's disease would explain "everything". van Gogh's bizarre behaviour cannot be explained by this diagnosis only. van Gogh probably had more than one medical problem. Our goal is to suggest Meniere's disease to replace epilepsy. van Gogh probably also suffered from manic-depressive illness, syphilis and substance abuse. van Gogh was very intense, neurotic and depressed.

CONCLUSION

In conclusion, on the basis of Vincent van Gogh's hand written statements, we are convinced that he most probably suffered from Meniere's disease (inner ear dysfunction and idiopathic endolymphatic hydrops), with its characteristic exacerbations and remissions of attacks of "vertige". His "auditory hallucinations" may have been tinnitus associated with a downward fluctuation in hearing, sound distortion, noise sensitivity, Tullio phenomenon and recruitment. His visual hallucinations may have been nystagmus or oscillopsia. Despair caused by

aural fullness, pressure, tinnitus and head discomfort may have been the reasons he mutilated his ear. Attacks of recurrent vertigo and the additional minor cochlear symptoms of noise intolerance and recruitment may have contributed to van Gogh's feeling of helplessness about the inexorable progression of his disease, and may have been a factor in his suicide. Necessarily, the evidence is circumstantial, but the diagnosis of Meniere's disease is consistent with his own written statements (1). A diagnosis of epilepsy is not consistent with van Gogh's written statements (1), and is based on a late 19th century misconceptions and misdiagnosis.

Meniere's disease is a common disorder estimated to afflict anywhere from 2.4 to 7 million Americans (25). It is important for the physician to recognize the potentially devastating secondary physical and psychological effects of this chronic, debilitating, often bilateral disease (26). Unexpected attacks of episodic vertigo, severe tinnitus and aural pressure, as well as the hearing deficit, can be incapacitating and should elicit compassion and understanding from the physician and family.

Many patients have trouble describing their subjective sensations of the varying clinical symptoms in inner ear dysfunction and Meniere's disease. Communication is further impeded because these fluctuating symptoms may be coming from one ear or the other or both during different episodes or "attacks". Bilateral inner ear dysfunction is more common than was previously thought (26). If the physician tells the patient nothing can be done or implies that the symptoms are psychologically based, the patient, like van Gogh, is going to feel helpless. This may explain why Vincent van Gogh, the brilliant, sensitive, and creative artist sounded so isolated, frustrated and hopeless in his last letters. He was very concerned in his last months that he could or would not ever sell his paintings:

> Now in order to get some clients for portraits, one must be able to show different ones that one has done. That is the only possibility I see of selling anything. Yet notwithstanding everything, some canvasses will find purchasers someday (To Theo, no. 638, June 4, 1890, Arles, 7 weeks prior to his suicide).

Interestingly, his most recent sale of the portrait of "Adeline Ravoux" fetched $ 14.3 million, the fourth highest price paid for a work of art at the time. The three others bringing in even more money were *all* van Gogh's!

Some progress has been made in diagnosing Meniere's disease and treating inner ear dysfunction and hydrops in the 125 years since Prosper Meniere first described it (27–31), but not as much as we think should be possible.

REFERENCES

1. The Complete Letters of Vincent van Gogh, Volumes I, II, III, New York Graphic Society (Greenwich, CN). Approved English Edition with reproductions of all the drawings in the correspondence, 1958. Citations in the text are indicated by the assigned number of the letter and the month and year of the letter.
2. Meniere, P., Gazette Medicale de Paris, 1861, translated by Atkinson, M., "Meniere's Original Papers". *Acta Otolaryngol (Stockh)*, Suppl 162, 1961.
3. Yasuda, K., Was van Gogh suffering from Meniere's disease? *Otologia* (in Japanese) *25* 1427–1439, 1979.
4. Trousseau, A., De la congestion cerebrale apoplectiform, dans ses rapports avec l'epilepsie. *Gazette Medicale de Paris 16*, 51–52, 1861.
5. Rewald, J., Post impressionism: van Gogh to Gauguin. Museum of Modern Art (NY), 1956.
6. Maire, F. W., van Gogh's suicide. *JAMA 217*, 938–939, 1971.
7. Lee, T. C., van Gogh's vision: digitalis intoxication. *JAMA 245*, 727–729, 1981.
8. Arnold, W. F., Vincent van Gogh and the Thujone connection. *JAMA 260*, 3042–3044, 1988.
9. Perry, I. H., Vincent van Gogh's illness—A case record. *Bull Hist Med 21*, 146–172, 1947.
10. Balkany, T. J., Arenberg, I. K., Pillsbury, H. C. Defining and quantifying Meniere's disease. *Otol Clin North Am 13*, 589–596, 1980.
11. Schuknecht, H. F., *Pathology of the ear*, pp. 262–266. Harvard U. Press, (Cambridge, MA) 1974.

12. House, W., Carry, W. C., Wexler, M., The interrelationship of vertigo and stress in Meniere's disease. *Otol Clin North Am 13*, 625–629, Nov. 1980.
13. Arenberg, I. K., Stahle, J., Staging Meniere's disease or any inner ear dysfunction and the use of the vertigogram. *Otol Clin North Am 13*, 643–656, 1980.
14. van Gogh, V., Letters of Vincent van Gogh 1886–1890—A facsimile edition I and II. Scholar Press, London, 1977.
15. Alford, B. R., Report of subcommittee on equilibrium and its measurement. Meniere's disease criteria for diagnosis and evaluation of therapy for reporting results. *Trans Am Acad Ophthalmol Otol 76*, 1462–1464, 1972.
16. Tralbaut, M. E., *Vincent van Gogh*. Viking Press, NY, 1969.
17. Runyan, W. K., Why did van Gogh cut off his ear? The problem of alternative explanations in psychobiography. *J Personal Soc Psychol 40*, 1070–1077, 1981.
18. Spratling, W. S., *Epilepsy and its treatment*. W. B. Saunders, Philadelphia, 1904.
19. Doiteau, V., Leroy, E., *La Folie de van Gogh*. Paris, 1928, p. 55 cited by Rewald, op. cit.
20. Pillsbury, H. C., Postma, D. S., The Tullio phenomenon, fistula test and Henneberts' sign: Clinical significance. *Otol Clin North Am 16*, 205–208, 1983.
21. Facsimile of page from asylum register reproduced and cited in Rewald (4), p. 348.
22. Tenkin, O., The falling sickness. Johns Hopkins Press, Baltimore, 1971.
23. Charcot, J. M., Lectures on the diseases of the nervous system. Facsimile of London, 1881, New York Academy of Medicine, Hafner Publishing Company, 1962.
24. Gardner, H., *Art through the ages*, p. 677. Harcourt, Brace, Jovanovich (NY) 1954.
25. Arenberg, I. K., Balkany, T. J., Goldman, G. et al., The incidence and prevalence of Meniere's disease—Statistical analysis of limits. *Otol Clin North Am 13*, 597–601, 1980.
26. Balkany, T. J., Sires, B., Arenberg, I. K., Bilateral aspects of Meniere's disease—An underestimated clinical entity. *Otol Clin North Am 13*, 603–610, 1980.
27. Arenberg, I. K., Overview of inner ear disease. *Am J Otol 8*, 189–194, 1987.
28. Wright, III, J. W., Hicks, G. W., Valved implants in endolymphatic sac surgery. *Am J Otol 8*, 307–312, 1987.
29. Huang, T. S., Valve implants compared to other surgical methods. *Am J Otol 8*, 301–306, 1987.
30. Arenberg, I. K., Results of endolymphatic sac to mastoid shunt surgery for Meniere's disease refractory to medical therapy. *Am J Otol 8*, 335–344, 1987.
31. Arenberg, I. K., Gibson, W. P. R., Non destructive surgery, for vertigo. In: Pillsbury, H. C., Goldsmith, M. C., eds. Operative challenges in otolaryngology—head and neck surgery, chapt. 7. Chicago Yearbook Medical Publishers, Inc. 93–111, 1990.
32. Arenberg, I. K., Countryman, L. F., Bernstein, L. H., Shambaugh, G. E. jr. Van Gogh had Meniere's disease and not epilepsy. JAMA *264*: (4) 491–493, July 25, 1990.

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