

Historical aphasia cases

“Tan-tan”, “Vot-vot”, and “Cré nom!”

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ABSTRACT

We describe three cases of aphasia in patients who were internationally famous historical personalities, such as the case of Mr. Leborgne (“Tan”) published by Paul Broca in 1861, which became a reference for the study of aphasias. The other cases described here are those of the Russian revolutionary and politician Vladimir Ilyitch Ulianov (Lenin) (“Vot-vot”) and the French poet Charles Baudelaire (“Cré nom!”). Besides their historical relevance and the clinical picture of aphasia, these three cases share as a common feature the occurrence of speech automatism or stereotypes.

Key words: aphasia, utterances, Broca, Lenin, Baudelaire.

Casos históricos de afasia: “Tan-tan”, “Vot-vot”, e “Cré nom!”

RESUMO

São apresentados três casos de afasia que ocorreram em personalidades famosas da história mundial, como o do Sr. Leborgne (“Tan”), publicado por Paul Broca, em 1861, que se tornou o caso *princeps* no estudo das aphasias. Os outros casos apresentados são a afasia do político e revolucionário russo Vladimir Ilyitch Ulianov (Lênin) (“Vot-vot”) e do poeta francês Charles Baudelaire (“Cré nom!”). Além de sua relevância histórica e do quadro clínico de afasia, estes três casos têm em comum a presença de automatismos ou estereotípias verbais.

Palavras-chave: afasia, elocução, Broca, Lenin, Baudelaire.

Aphasia can be defined as a loss or impairment of oral language abilities as a result of a brain dysfunction. Other related language disorders include alexia, agraphia, acalculia, apraxia and Gerstmann’s syndrome¹. There are several approaches to the assessment of patients with aphasia. One of the simplest, most practical and fastest is the Frenchay Aphasia Screening Test, published in 1987². Aphasias can in general be assessed as part of different syndromes, such as Broca’s aphasia, Wernicke’s aphasia, conduction aphasia and global aphasia, among others¹.

Broca’s aphasia, or expressive or motor aphasia, is the most widely known form of this disorder, characterized by nonfluent verbal expression in which a few words

are produced with great effort. Patients with Broca’s aphasia produce several short phrases, often pronouncing a single word in-between pauses. Other characteristics of Broca’s aphasia are dysprosody and agrammatism with impaired reading comprehension; these are often accompanied by right hemiplegia and apraxia. Comprehension of spoken language is relatively spared, particularly to simple commands and routine conversation¹. From an anatomical perspective, Broca’s aphasia is related to lesions in the Broca’s area, located in the inferior frontal gyrus (*pars opercularis* and *pars triangularis*) of the left cerebral hemisphere, usually with extension to the adjacent subcortical white matter¹.

The second commonest type of aphasia is Wernicke’s aphasia, which dif-

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fers from Broca's aphasia in that the patient can speak fluently, articulating and producing grammatical structures normally, but with abnormal content, meaningless words, paraphasias and frequent neologisms. Patients with Wernicke's aphasia have great difficulty understanding spoken language and have lesions in the temporal lobe of the dominant cerebral hemisphere¹.

Another form of aphasia is known as global aphasia, which involves different types of language impairment: nonfluent spontaneous speech and impaired auditory comprehension, repetition, naming, reading and writing. This form of aphasia is accompanied by right hemiparesis or hemiplegia, sensory deficits and hemianopsia. Lesions associated with the development of global aphasia usually occur in the frontal and parietotemporal regions of the left cerebral hemisphere¹.

The first case reports and studies of aphasia were carried out in France in the 19th century by Paul Broca, a famous French surgeon who was also an anatomist and anthropologist, in his seminal work on aphasia^{3,4}.

The aim of this article is to describe three cases of aphasia studied in internationally famous historical personalities, one of which is the case of the patient "Leborgne" ("Tan") published by Paul Broca in 1861, which became a reference for the study of aphasias and was subsequently the subject of considerable controversy. The other cases described are those of Vladimir Ilyich Ulyanov (Lenin) and Charles Baudelaire.

Paul Broca and the famous patient "Tan"

In 1861 in Paris, France, Paul Pierre Broca (Fig 1) published a report in the *Bulletin de la Société Anthropologique* of a case of aphasia associated with a lesion in the left frontal lobe that at the time he called *aphemia*⁵. The patient, Mr. Leborgne, was a 51 year-old man with a previous history of aphasia and right hemiplegia who presented with a clinical picture of gangrene of the right lower limb and subsequently went into a coma and died. Broca performed an autopsy and found destructive lesions in the second and third frontal convolutions of the left cerebral hemisphere, the inferior margins of the Sylvian fissure, the insula and the adjacent part of the *striatum*, confirming his ideas about the location of language³⁻⁵. Broca's phrase "We speak with our left hemisphere"³ became famous. The specific frontal lobe region was later defined as Broca's area, and the aphasia was given the name Broca's aphasia by Trousseau⁴.

The patient, Mr. Leborgne, became known as "Tan" because of the expressive aphasia he suffered from, as a result of which he could only keep repeating "Tan tan". This was described in the case report written by Broca in 1861 and published by Dronkers et al. in 2007: "He could no longer produce but a single syllable, which he usually

repeated twice in succession; regardless of the question asked him, he always responded 'tan, tan,' combined with varied expressive gestures. This is why, throughout the hospital, he is known only by the name 'Tan'⁴.

After its publication, this famous case gave rise to countless controversies, including the assessment by Pierre Marie, who examined Tan's brain and disagreed about the anatomical location of the lesion, and the contradictory positions of Paul Broca and Hughlings Jackson⁶.

Finally, neuroimaging studies of Tan's brain (initially using computed tomography) carried out by Castaigne et al. in 1980⁷ and Signoret et al. in 1984⁸ confirmed that the damage was in Broca's area as well as in the insula. However, the study of Tan's brain using MRI by Dronkers et al. published in 2007 showed that the lesion was larger than Broca had previously reported⁴.

In 2000, Selnes and Hillis revised the diagnosis of the patient Tan, who had been described by Paul Broca as a characteristic example of motor, or Broca's, aphasia, and suggested that Tan should have been classified as having global aphasia because of his frequent stereotypical utterances^{9,10}. Indeed, various studies have associated the presence of stereotypical utterances in patients with global aphasia¹¹⁻¹³.

Lenin's aphasia - "Vot-vot"

Vladimir Ilyich Ulyanov, who was better known as Lenin (Fig 2), was one of the founders of the Bolshevik (communist) party in Russia and the intellectual leader of the October Revolution. After the revolution, he became head of the Soviet state¹⁴.

Lenin died in 1924 at the age of 54 after suffering a series of ischemic strokes brought about by severe atherosclerotic disease of a familial nature^{14,15}.

Lenin's cerebrovascular disease started to manifest itself when he was 52 years old in the form of various transient ischemic attacks with sensory deficits in the right side of the body, particularly affecting the hand and sometimes accompanied by language impairment¹⁴⁻¹⁶. There is evidence that the signs and symptoms of a stroke, such as loss of consciousness, right hemiparesis/hemiplegia and aphasia, occurred in 1922 and 1923¹⁴⁻¹⁶.

There are reports that the head of the medical service at the Kremlin, Dr. Khodorovsky, discovered manuscripts written by Professor Kramer, the neurologist who treated Lenin. In these, he relates Lenin's disease to severe atherosclerotic changes in the cerebral blood vessels^{14,15}.

In March 1923, according to information from Professor Kramer's diary, Lenin presented with a clinical picture of aphasia, when he "tried to say something but only emitted incomprehensible sounds", or even "appeared to be completely conscious but was suffering from complete motor aphasia". There are reports that at that time



Fig 1. Paul Pierre Broca.

Extracted from http://pt.wikipedia.org/wiki/Paul_Broca.



Fig 2. Vladimir Ilyitch Lenin.

Extracted from http://pt.wikipedia.org/wiki/Vladimir_Lenin.



Fig 3. Charles Baudelaire.

Extracted from http://pt.wikipedia.org/wiki/Charles_Baudelaire.

Lenin nearly always responded to questions by saying “Vot-vot”^{14,15}.

Lenin’s famous biographer, Dmitri Volgokonov, using secret Soviet archives, reports that Lenin started to use the expression “vot-vot” to voice agreement, an objection, a complaint or disagreement or even to invite or keep up a conversation. Because of this, Lenin’s wife, Mrs. Krupskaya, started to use exercises based on cards with the letters of the alphabet so that Lenin could say some words, such as “congress”, “people” or “revolution”. This could indicate that Lenin’s understanding was relatively spared and that his oral expression was severely impaired, suggesting that he was suffering from Broca’s aphasia¹⁴. Another possibility is that in fact he had global aphasia, similar to that of Paul Broca’s patient, Mr. Leborgne.

Subsequent neurological assessments carried out by Hentschel, Nonne, Foerster, Kozhevnikov, Yelistratov and Kramer when Lenin’s clinical condition worsened (probably as the result of other ischemic events) indicated that he ended up developing Wernicke’s aphasia^{14,17}.

After various episodes of stroke, Lenin’s clinical picture worsened and he began to suffer from repeated focal motor seizures, *status epilepticus* and respiratory infection, progressing to death¹⁴⁻¹⁶.

During the period when Lenin presented with cerebrovascular disease, he was seen by a total of 26 doctors, including neurologists and psychiatrists, such as the famous professors of Neurology Rossolimo, Strümpell and Bekhterev^{14,15,17}.

Lenin’s ischemic cerebrovascular disease was confirmed in his autopsy, which revealed the presence of multiple cerebral infarcts and signs of diffuse atherosclerosis classified as extremely severe. The autopsy report includes the following description: “sclerosis of blood vessels in Vladimir Ilyitch was so advanced that the ves-

sels were calcified...the walls of the vessels were so thick and the vessels so narrow that not even a strand of hair could pass through the lumen...”^{14,15,18}.

Oscar Voigt and his wife Cécile, neuroanatomists from Germany, were invited to set up a brain bank in Moscow and later carried out studies of the cytoarchitecture of Lenin’s brain, which were published in 1929¹⁹.

Baudelaire’s aphasia “Cré nom!”

The French poet Charles-Pierre Baudelaire (Fig 3), considered one of the most important in the 19th century, became world famous because of the many great works of poetry he wrote, particularly the poem “Les Fleurs du Mal”, published in 1855^{20,21}.

Essentially, he represents what can be defined as the cursed poet, who lives a dissolute, bohemian life, uses drugs, frequents prostitutes and immerses himself in a world of libertinage. The great writer Victor Hugo considered Charles Baudelaire’s literary work to be of high quality and called it “un frisson nouveau”²⁰.

Charles Baudelaire’s biographical data reveal that he contracted various venereal diseases, including syphilis, which progressed to a neurological form (probably meningovascular) with the development of cerebrovascular disease²⁰.

There are reports that since 1866 Charles Baudelaire presented on various occasions with a clinical picture of stroke with motor deficit and later developed right hemiplegia and aphasia^{20,21}.

One of the most important characteristics of Baudelaire’s aphasia, which was first noticed when he was sent by his family to a convent in Brussels, Belgium, for clinical treatment and follow-up, was that when asked about different things, he would always reply with the expression “Non, non, cré nom, nom!”, or even more often “Cré nom, cré nom!”. This expression is in fact an abbreviated

form of the expression “Sacré nom de Dieu”, which at that time was considered blasphemous, similar to “God-damn” nowadays^{20,21}.

The expression “Sacré nom de Dieu” was highlighted in the case of the Marchioness of Dampierre, who suffered from Tourette’s syndrome and developed coprolalia. Charcot mentioned having met the marchioness in public and heard her using the expression “Sacré nom de Dieu”, together with other obscenities uttered involuntarily²².

According to scientific data in the literature, Baudelaire’s aphasia may have been expressive aphasia (Broca’s aphasia), characterized by difficulty with expression, single utterances and preserved understanding. However, a more detailed analysis of the clinical picture, as Dieguez and Bogousslavsky suggest, would indicate that he may also have suffered from global aphasia²⁰.

Final comments

Besides their historical relevance and the clinical picture of aphasia, the three cases presented here share as a common feature the occurrence of speech automatisms or stereotypes. This linguistic symptom affects up to 20% of patients with chronic aphasia, being defined as recurring and stereotyped utterances (neologisms, words or phrases) that do not fit into context and which are produced against the presumed intention of the patient²³.

Poeck and colleagues¹² have argued that patients whose verbal production is characterized by the same recurring consonant-vowel syllable represent a variety of global aphasia, with fluent output and relative preservation of prosody. Code²⁴ proposed a distinction between two types of recurring utterances, namely, real word recurrent utterances and non-meaningful recurrent utterances. The latter are the type of utterances presented by the three cases discussed here, especially by Leborgne and Lenin. From an anatomical point of view, non-meaningful recurrent utterances may be related to a severe impairment of the phonological system in the left hemisphere and, also to some degree, to the participation of intact systems of the right hemisphere^{23,24}.

Speech automatisms have been scarcely studied in the scientific literature. Hence, we hope that the gathering of these three important historical cases in the present article may represent a contribution to shed

more light on a frequent and intriguing linguistic and neurological symptom.

REFERENCES

1. Benson DF, Geschwind N. Aphasia and related disorders: a clinical approach. In: Mesulam MM (Ed). Principles of Behavioral Neurology. Contemporary Neurology Series. F.A. Davis Company, Philadelphia, USA, 1985:193-238.
2. Enderby PM, Wood VA, Wade DT, Hewer RL. The Frenchay Aphasia Screening Test: a short, simple test for aphasia appropriate for non-specialists. *Int Rehabil Med* 1987;8:166-170.
3. Pearce JMS. Broca’s aphasias. *Eur Neurol* 2009;61:183-189.
4. Dronkers NF, Plaisant O, Iba-Zizen MT, Cabanis EA. Paul Broca’s historic cases: high resolution MR imaging of the brains of Leborgne and Lelong. *Brain* 2007;130:1432-1441.
5. Broca PP. Remarques sur le siege de la faculté du langage articulé, suivies d’une observation d’aphémie (perte de la parole). *Bull Soc Anat* 1861;6:330-357. <http://psychclassics.yorku.ca/Broca/aphemie.htm>.
6. Lorch MP. The merest Logomachy: The 1868 Norwich discussion of aphasia by Hughlings Jackson and Broca. *Brain* 2008;131:1658-1670.
7. Castaigne P, Lhermitte F, Signoret JL, Abelanet R. Description et etude scanographique du cerveau de Leborgne: la découverte de Broca. *Rev Neurol* 1980;136:563-583.
8. Signoret JL, Castaigne P, Lhermitte F, Abelanet R, Lavorel P. Rediscovery of Leborgne’s brain: anatomical description with CT scan. *Brain Lang* 1984;22:303-319.
9. Selnes OA, Hillis A. Patient Tan revisited: a case of atypical global aphasia? *J Hist Neurosci* 2000;9:233-237.
10. De Bleser R, Poeck K. Aphasia with exclusively consonant-vowel recurring utterances: tan-tan revisited. *Adv Neurol* 1984;42:51-57.
11. Code C. Neurolinguistic analysis of recurrence utterance in aphasia. *Cortex* 1982;18:141-152.
12. Poeck K, De Bleser R, Keyserlingk DF. Neurolinguistic status and localization of lesion in phasic patients with exclusively consonant-vowel recurring utterances. *Brain* 1984;107:199-217.
13. Blanken G, Wallesch CW, Papagno C. Dissociations of language functions in aphasics with speech automatisms (recurring utterances). *Cortex* 1990;26:41-63.
14. Volkogonov D. Lenin. A new biography. The Free Press, New York, USA, 1994:409-435.
15. Teive HAG, Germiniani FMB, Della-Coletta M, Cardoso AB, Camargo CHF, Werneck LC. As doenças neurológicas de Lenin. *Dendrito* 2001;7:99-101.
16. Kaplan GP, Petrikovsky BM. Advanced cerebrovascular disease and the death of Vladimir Ilyich Lenin. *Neurology* 1992;42:241-245.
17. Sarikcioglu L. Otfred Foerster (1873-1941): one of the distinguished neuroscientists of his time. *J Neurol Neurosurg Psychiatry* 2007;78:650.
18. Kreutzberg GW, Klatzo I, Kleihues P. Oskar Vogt and Cécile Vogt, Lenin’s brain and the bumble-bees of the black forest. *Brain Pathol* 1992;2:363-371.
19. Bentivoglio M. Cortical structure and mental skills: Oskar Vogt and the legacy of Lenin’s brain. *Brain Res Bull* 1998;47:291-296.
20. Dieguez S, Bogousslavsky J. Baudelaire’s aphasia: From poetry to cursing. In: Bogousslavsky J, Hennerici MG (Eds). *Neurological disorders in famous artists. Part 2*. Front Neurol Neurosci. Basel, Karger 2007;22:121-149.
21. Lebrun Y, Hasquin-Deleval J, Brihaye J, Flament J. Charles Baudelaire’s aphasia. *Rev Neurol* 1971;125:310-316.
22. Teive HAG, Chien HF, Munhoz RP, Barbosa ER. Charcot’s contribution to the study of Tourette’s syndrome. *Arq Neuropsiquiatr* 2008;66:18-21.
23. Wallesch CW, Blanken G. Recurring utterances-how, where, and why are they generated? *Brain Lang* 2000;71:255-257.
24. Code C. On the origins of recurrent utterances in aphasia. *Cortex* 1982;18:161-164.