

LETTERS TO THE EDITOR

The neuropsychology of hanging: an historical perspective

Medalia, Merriam and Ehrenreich¹ reported two cases of attempted hanging with subsequent isolated memory defects. Their report is particularly interesting, as hanging is still one of the most common methods of committing suicide. How death occurs during hanging and how, when and why the brain's activity is altered by strangulation, has been the subject of much debate. Medalia *et al* ignore this literature, and instead incorrectly emphasise in the first sentence of their abstract that "only one report on the neuropsychological sequelae of attempted hanging exists in the English literature".¹

In 1983 a report by Mengech² described "Strangulation as a cause of Korsakoff psychosis". Other English-language reports on the neuropsychological consequences of attempted hanging stem from Whiteley³ and Stengel.⁴

Furthermore, there is a considerable amount of early German-language literature on the neurological and neuropsychological consequences of unsuccessful attempts at hanging.⁵⁻⁶ Already in 1896 Boediker⁷ described attempted hanging as usually resulting in retrograde amnesia. Two of the first detailed reports of such cases were given by Wagner^{8,9} in Southeastern Austria. In his article from 1889⁸ he referred to 17 previous cases which had been described in the years between 1826-87. Wagner⁹ also mentioned Leidesdorf,¹⁰ who had given examples of cases related to hanging. Leidesdorf¹⁰ for example wrote: "The rope which the Siberian Shaman allows to be laid around his throat, until, shortly before choking, he goes into ecstases, . . ."

Of principal importance are Wagner's publications and a related report of Pick (which is cited in Wagner⁹) as both emphasised the time point of the onset of retrograde amnesia before hanging.

Wagner⁹ noted that attempted hanging usually resulted in severe memory disturbances which he characterised as "dementia acuta", but that these amnesic states were usually only temporary; in a few cases he noted that the reverse pattern might even follow, namely an improvement of amnesic functions or the cure of a psychosis.

A few years later, Wollenberg¹¹ described a 39 year old carpenter, who hanged himself during a stay in a psychiatric clinic, to which he had been admitted with paranoia and because he had tried to hang himself eight days earlier. Wollenberg assumed that a preceding loss of consciousness was an important requirement for retrograde amnesia to occur, though unconsciousness did not necessarily lead to retrograde amnesia.^{12,13}

Some years later, Wachsmuth¹⁴ reported a 23 year old merchant who had a shot-wound in his head of uncertain origin; an attempted suicide was assumed to have occurred. The patient made a second attempt by hanging himself during his admission to hospital,

which resulted in profound retrograde amnesia. At the time of Wagner and Wollenberg there was still a serious discussion on whether retrograde amnesia after hanging was organic or psychic in origin, and this was reviewed by Schneider.¹⁵

The question was also central to Sommer's report¹⁶ on "the amnesic disturbances after attempts by hanging". On the basis of his two cases he confirmed the observation of other scientists that following strangulation there is a retrograde amnesia for a few days and usually also an anterograde one for one or two days.

In the ensuing debate over the views of Möbius (that amnesia following strangulation is of hysterical nature) and Wagner (that it is organic), Sommer was strongly inclined to follow Wagner's opinion (Paul,¹⁷ had argued vehemently against Möbius's opinion, and also Meyer¹⁸ considered Wagner's view the most plausible one). Sommer assumed that complete blockage of the carotids and the interruption of the venous discharge resulted in temporary but still severe nutritional disturbance of the nervous tissue with functional detriment to the neurons but without damaging them permanently. The controversial views of Möbius were published in 1922.¹⁸

Meyer¹⁹ combined a large number of psychological and neurological tests to determine the status of his patient. This 24 year old man attempted to hang himself and was found and rescued early in the morning. His skill memory was preserved, and he remembered how to salute, while his episodic memory was disturbed. Meyer compared the patient's behaviour over several days, asking daily the same questions and tabulating the respective answers. He concluded that the patient's behaviour is best described as Korsakoff's syndrome, and that strangulation will typically result in Korsakoff's symptoms.

Fraenkel²⁰ in 1911 reported the case of a 20 year old woman who after strangulation had massive disturbances in anterograde and retrograde memory and was disoriented to time and place. The patient remained in an amnesic condition even after four months, but had not been psychiatrically normal before the attempted hanging. Fraenkel discussed this case as resembling the symptoms of Korsakoff's psychosis.

After the Second World War, Jacob and Pyrkosch²¹ carried out a detailed analysis of the consequences of hanging on the anatomy of the brain. They based their investigation on the investigation of three out of 20 brains from cases who died after hanging. It is interesting that, as in other cases with hypoxic or anoxic brain damage, the hippocampal formation was consistently affected. The subicular cortex, and Ammon's horn especially, showed degenerated neurons. Other areas of cell damage were in the claustrum, the pallidum, and the thalamus. It cannot be determined, however, if the damage was primarily caused by the reduced oxygen consumption or by convulsions which may occur during hanging.

Together, these early examples may show that there has been a wide discussion of the neurological and neuropsychological sequelae of hanging during the past 100 years and both the mechanisms and brain centres discussed by Medalia *et al*¹ as acting critically on or affecting cognition, had already been similarly debated by earlier authors.

HANS J MARKOWITZCH
Physiological Psychology,
University of Bielefeld,
100 131, D-8400, Bielefeld, Germany.

- 1 Medalia AA, Merriam AE, Ehrenreich JH. The neuropsychological sequelae of attempted hanging. *J Neurol Neurosurg Psychiatry* 1991;54:546-8.
- 2 Mengech HNK arap. Strangulation as a cause of Korsakoff psychosis. *East African Medical Journal* 1983;60:343-5.
- 3 Whiteley RN. Korsakoff's syndrome following an attempt at hanging. *Med J Austral* 1958;2:53-4.
- 4 Stengel E. *Suicide and attempted suicide*. Harmondsworth: Penguin, 1964.
- 5 Salinger F, Jacobsohn H. Psychische Störung nach Strangulationsversuch. *Z Neurol Psychiat* 1927;110:372-82.
- 6 Markowitsch HJ. *Intellectual functions and the brain: an historical perspective*. Toronto: Hogrefe and Huber, 1992.
- 7 Boediker NNG. Ueber einen Fall von retro- und anterograder Amnesie nach Erhängungsversuch. *Arch Psychiat Nerven* 1896;29:647-50.
- 8 Wagner J. Ueber einige Erscheinungen im Bereiche des Centralnervensystems, welche nach Wiederbelebung Erhängter beobachtet werden. *Jahrb Psychiat* 1889;8:313-32.
- 9 Wagner J. Psychische Störungen nach Wiederbelebung eines Erhängten. *Wiener Klin Wochenschr* 1891;53:998-1002.
- 10 Leidesdorf M. *Lehrbuch der psychischen Krankheiten*, 2nd ed. Erlangen: F Enke, 1865.
- 11 Wollenberg R. Weitere Bemerkungen über die bei wiederbelebten Erhängten auftretenden Krankheitserscheinungen. *Arch Psychiat Nervenkrankh* 1897;31:241-57.
- 12 Bleuler E. Über unbewusstes psychisches Geschehen. *Z ges Neurol Psychiat* 1921;64:122-35.
- 13 Bumke O. *Das Unterbewusstsein*. Berlin: Springer, 1922.
- 14 Wachsmuth H. Schussverletzung des Gehirns (Selbstmordversuch?) mit retrograder Amnesie und unrichtiger Ergänzung der Erinnerungslücke (Beschuldigung eines Andern). *Arch Psychiat Nervenkrankh* 1907;42:311-7.
- 15 Schneider K. Die Störungen des Gedächtnisses. In: Bumke O, ed. *Handbuch der Geisteskrankheiten*, Vol 1. Berlin: Springer, 1928: 508-29.
- 16 Sommer M. Zur Kenntnis der amnestischen Störungen nach Strangulationsversuchen. *Monatsschr Psychiat Neurol* 1903;14:221-30.
- 17 Paul M. 1899 Beiträge zur Frage der retrograden Amnesie. *Arch Psychiat Nervenkrankh* 1899;32:251-82.
- 18 Möbius PJ. *Über den physiologischen Schwachsinn des Weibes*, 12th ed. Halle: Carl Marhold, 1922.
- 19 Meyer E. Psychische Störungen nach Strangulation. *Med Klinik* 1910;38:1482-6.
- 20 Fraenkel M. Beitrag zur Aetiologie des Korsakowschen Symptomenkomplexes. *Arch Psychiat Nervenkrankh* 1911;48:756-75.
- 21 Jacob H, Pyrkosch W. Frühe Hirnschäden bei Strangod und in der Agonie. *Arch Psychiat Z Neurol* 1951;187:177-86.

A neurological audit in Vitoria, Spain

In response to your invitation we are sending this brief account of a neurology outpatient audit in Vitoria, Spain. This is a health district with a population of 300 000 served by two neurology units based in two hospitals, totalling eight neurologists (one neurologist per 37 500 population). The data are based on the 987 new patients seen in 1989 by the three neurologists in one of the hospitals.

The objectives of our audit were somewhat different from the ones in the English audit reported in your journal,¹ reflecting the different systems they study. In Spain there are proportionally more neurologists than in the UK and general practitioners tend to refer all patients whose complaints they suspect to be neurological. This results in the number of referrals being too large to be seen in hospital, so that two types of neurologist are evolving: those working in primary care