



## Clinical practice

## Hysterical paralysis and premature burial: A medieval Persian case, fear and fascination in the west, and modern practice<sup>☆</sup>

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## ABSTRACT

Premature burial (taphophobia) is an ancient fear, but it became especially common in 18th and 19th century Europe and may have a modern-day counterpart. Examination of a well-documented case from medieval Persia reveals the importance of funeral practices in the risk of actual premature burial and sheds light on the question of why taphophobia became so prevalent in Europe during the early industrial revolution period. The medieval Persian case was attributed to hysterical paralysis (conversion). We discuss the relationship between hysterical paralysis and premature burial more generally and show that although understanding of conversion syndrome remains incomplete, modern knowledge and practices have limited the risk of any similar tragedy today.

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### 1. Introduction

The fear of premature burial (taphophobia) is ancient,<sup>1–5</sup> though it seems to have reached unprecedented heights in 18th and 19th century Europe.<sup>6,7</sup> For example, its alleged association with epilepsy and catalepsy (which at that time were not clearly distinguished) made several appearances in 19th century romantic and realist literature in the English-speaking world.<sup>8</sup> This phenomenon is associated with a wide range of superstitions<sup>9</sup> and appears to have a modern equivalent: the fear of organs being harvested from a living patient.<sup>10</sup> The determination of death, and *a fortiori* the avoidance of premature burial, are serious scientific and ethical issues in present-day medicine and are of public concern.<sup>11,12</sup> The diagnosis of brain death is especially problematic in severely traumatized patients, and many of the related scientific and social issues remain controversial.<sup>13</sup> The problem is made more acute because of the imbalance between the supply of organs for transplantation and

the increasing demand for transplantation surgery. Multimodality-evoked potentials have been considered as reliable, accurate and safe tests for irreversible brain death as they can be performed rapidly, are not invasive, assess brain stem as well as cerebral activity, and are not sensitive to interference from hypothermia, drugs or metabolic disturbances.<sup>14</sup> Nevertheless, doubts remain as to whether any test of brain death can be infallible.<sup>15</sup>

Concern about the subject is not limited to the medical profession. Public fascination remains widespread; numerous past cases of premature burial, the fear of it, and devices for preventing it, are described on various web sites, though often without citations of primary sources. Several of these sources implicate hysterical paralysis in actual cases. In this paper, we shall review one such case reported in Qajarid Persia and relate it to a wider clinical, social and historical context.

### 2. When hysteria was misdiagnosed as death: the story of “mandatory death”

“The Mandatory Death” is a real event that happened in Qajarid Persia. In his *History of Medicine in Iran*, Roustai provided the

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intriguing history of a teenage girl who, so official reports indicate, presumably had a hysterical (conversion) reaction to a stressful family situation.<sup>16</sup> An English translation of the summary of this report follows.

### 2.1. The mandatory death

According to the story, a family with a fourteen-year-old girl was involved in tobacco farming in the outskirts of Urmia (a city in Northwestern Iran). As the daily routine, the housewife went to awaken her daughter and prepare her to go farming. On the grounds of her minority, the little girl refused to go to work. However, the mother insisted and she was forcibly awakened. As soon as she had unwillingly arisen, she fell on her bed and remained motionless. Realizing that her daughter had [apparently] stopped breathing, the mother started to cry and shout. Bystanders came to acknowledge the daughter's motionlessness and her lack of breath and pulse. Because of their poverty, the family was unable to consult the foreign physicians available in the region. With the lack of general practitioners in the city to examine the body and certify death, the family inevitably accepted the death and arranged for burial.

On ritual ablution of her body before burial, an elderly woman, who witnessed the procedure, observed occasional movements in the daughter's hand and head, and not infrequently a subtle voice. The [wise] old woman repeatedly reminded the washer of this issue; however, since such movements are not unlikely in the newly dead, the washer disregarded the reminders, and prepared the daughter for burial. Again, that old woman insisted on refraining from burial, and demanded that the family leave the body in her home until the following day and to watch and wait for a possible recovery. If the recovery did not happen, they could then bury the corpse. This request was not accepted and the girl was buried. Again, the old woman continued to insist that the little girl was alive. She convinced the brother and he proceeded with exhumation, only to find his sister motionless and therefore he buried her. The next morning, a neighbor came moaning, and claimed that he/she had seen an elder in a dream telling him/her that the girl was not dead and that she had recovered and ordered that she be taken out of the grave. After many arguments, consent to exhume was obtained. By the afternoon, the grave was re-opened only to find the poor girl had hit her head on the gravestone and had lost much blood. She had pulled herself down in the grave to unfasten her toe ties. Pulling off her hair and twisting the right hand on the head and the left one around the neck, she had knelt on her abdomen and had fallen prone, ultimately to die in extreme pain and suffering.

### 3. Burial practices

Traditionally, Muslim and Christian burial practices have much in common. However, there are obvious differences, such as the orientation of the corpse at burial (feet towards Mecca in Muslim practice, feet towards the east in Christianity). Three features distinctive of Muslim burials seem relevant when we compare the Qajarid Persia "mandatory death" case and instances of premature burial in the 18th-19th century western world. First, washing of the body by a same-sex person is required by Islamic law<sup>17</sup>; this was not required in Christian communities. Muslims prefer to bury the dead as soon as possible.<sup>18</sup> It should have prevented the premature burial if the old woman's concerns had been heeded. Second, tying the toes presumably accounted for the girl's attempts to open the tie and the resulting fatal mutilation. Third, Muslim graves are shallow, with the earth raised several centimeters above them, and the gravestones are small and simple. That may have been

instrumental in the girl's vain attempts to rescue herself when her paralysis ceased.

Another significant point may be the passage of time between death and burial. In Muslim communities, this interval is minimal. In many Christian communities in earlier centuries, the interval was longer, and the body was placed in the care of the Church rather than the family to ensure its safety and dignity.<sup>9</sup> The passage of time (typically several days) sufficed to preclude premature burial in the majority of cases. However, the advent of industrialization entailed very high death rates in the crowded new towns and cities, and burial as soon as possible after death was therefore necessitated. Also, in Protestant countries, prolonged rituals did not take place and care for the deceased was less emphasized than in Catholic countries. This combination of factors led to an increase in the number of quick, often "informal" burials (e.g. in gardens) with no particular care being shown, as illustrated graphically in some of Dickens's novels.<sup>9</sup> It is therefore not surprising that tachophobia became so acute and widespread in the 18th-19th century western world; in many instances there were genuine grounds for such fear.

We may therefore conjecture that the common factor between the Qajarid Persia "mandatory death" case and instances of premature burial in the 18th-19th century west was the short interval of time between death and burial, as well as the obvious lack of modern techniques such as multimodality-evoked potentials. But is hysterical paralysis, as in the "mandatory death", likely to have been involved in many other cases?

### 4. Hysterical paralysis (conversion) and other conditions mimicking death

Hysterical paralysis (conversion) is not the only condition that can simulate death. Apart from severe trauma, Guillain-Barré syndrome and other acute polyneuropathies such as Miller-Fisher syndrome,<sup>19,20</sup> and apparently the effects of cobra bites,<sup>21</sup> can mimic brain death. Other conditions such as cardiac arrhythmia, typhoid fever, stroke involving certain brainstem regions and infectious disease epidemics might have led to premature burials in the past. Premature burial as a result of natural disasters (e.g., earthquake, flood), occupational accidents (e.g., mine collapse) or war-time events (e.g., entrapment in rubble) are examples that might occur in the present day. Nevertheless, hysterical paralysis simulating death remains interesting and in many ways problematical.

Hysterical conversion disorders represent deficits in neurological function such as paralysis or somatosensory loss that are not explained by organic lesions and are, indeed, difficult to relate to any aspect of CNS function. Factors involved in hysterical paralysis are typically psychosocial and emotional,<sup>22,23</sup> as in the Qajarid Persia report, though the condition may accompany other disorders such as Bell's palsy<sup>24</sup> or, as suggested in the article by John et al.,<sup>21</sup> the effects of snake bites.<sup>25</sup> Hysterical paralysis often eludes accurate diagnosis<sup>26,27</sup> and has been confused with poliomyelitis,<sup>28</sup> relapsing tetanus,<sup>29</sup> neurological diseases,<sup>30</sup> spinal injury,<sup>31</sup> acute transverse myelitis<sup>32</sup> and stiff-person syndrome.<sup>33</sup> It is a diagnosis of exclusion that typically presents as mono-, hemi-, para-, or quadriplegia.<sup>34</sup>

Functional neuroimaging of conversion cases shows selective decreases in activity in the frontal and subcortical circuits involved in motor control, or in the somatosensory cortices or visual cortex; the effects are, respectively, hysterical paralysis, anesthesia and blindness.<sup>35</sup> Evoked potentials show little change in these cases, although there may be changes during later stages of integration (such as P300 responses). In contrast, limbic regions such as the cingulate gyrus or orbitofrontal cortex show increased activity during conversion symptoms, with effects on different sensory or

motor modalities.<sup>35</sup> Overall, this evidence suggests a perturbation of primitive reflexive protection and alertness mechanisms, which are largely unconscious and are mediated by interactions between the limbic and sensorimotor networks. Further imaging studies on different conversion symptoms might provide new insights into the neurobiological basis of conversion syndromes, potentially improving the clinical management of these patients. However, even without the use of multimodality-evoked potentials, recordings from the limbic cortex clearly suffice to prevent confusion of hysterical paralysis with death. This eliminates the risk of tragedies such as the Qajarid Persia “mandatory death” case in the modern world.

## 5. Conclusions

Several medical conditions apart from severe trauma can simulate death, including brain death, and in the past, these provided some risk of premature burial. Quadriplegic hysterical paralysis was probably salient among these conditions, as illustrated in the “mandatory death” case reported from medieval Persia. However, both the actual risk and the fear (tachophobia) of premature burial may be functions of funeral practices and social conditions rather than underlying clinical causes. Our comparison of practices in Muslim and Christian communities, and focus on social conditions during the early industrial revolution, suggests that the “mandatory death” tragedy was probably rare in the Muslim world and explains why premature death (and the fear of it) became so prevalent in 18th–19th century Europe. Although the neurological basis of hysterical paralysis is still not completely understood, modern knowledge and clinical practice preclude the occurrence of similar tragedies today.

### Conflict of interest

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