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Attitudes towards hastened death in ALS: A prospective study of patients and family caregivers

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Abstract

Amyotrophic lateral sclerosis (ALS) may be associated with the wish to hasten death (WTHD). We aimed to determine the prevalence and stability of WTHD and end-of-life attitudes in ALS patients, identify predictive factors, and explore communication about WTHD. We conducted a prospective questionnaire study among patients and their primary caregivers attending ALS clinics in Germany and Switzerland. We enrolled 66 patients and 62 caregivers. Half of the patients could imagine asking for assisted suicide or euthanasia; 14% expressed a current WTHD at the baseline survey. While 75% were in favour of non-invasive ventilation, only 55% and 27% were in favour of percutaneous endoscopic gastrostomy and invasive ventilation, respectively. These attitudes were stable over 13 months. The WTHD was predicted by depression, anxiety, loneliness, perceiving to be a burden to others, and a low quality of life (all $p < 0.05$). Lower religiosity predicted whether patients could imagine assisted suicide or euthanasia. Two-thirds of patients had communicated their WTHD to relatives; no-one talked to the physician about it, yet half of them would like to do so. In conclusion, physicians should consider proactively asking for WTHD, and be sensitive towards neglected psychosocial problems and psychiatric comorbidity.

Key words: *Ethics, palliative care, wish to hasten death, assisted suicide, depression*

Introduction

Amyotrophic lateral sclerosis (ALS) is a progressive and devastating disease with an uncertain pathogenesis and is likely to remain a fatal disorder for the years to come (1). Median survival is less than three years from diagnosis. Many patients with ALS experience depression, anxiety, loss of control, and other psychosocial complications (2,3). Although death is usually peaceful (4,5), the patient's last phase of life may be burdened by respiratory distress, anxiety, psychosocial or spiritual concerns (3,4,6,7).

Hence, ALS is one of the disease states that are associated with the wish to hasten death (WTHD). In the Netherlands, 16–20% of ALS patients die by physician-assisted suicide (PAS) or euthanasia, and another 15% after continuous deep sedation (8,9). An early Oregon study completed while PAS legalization was still under a moratorium showed that 56% of ALS patients would consider PAS (10). The recent report about the practice in Oregon states that 7.6% of PAS deaths occurred in ALS patients, who were thus 10 times more likely to use PAS than cancer patients would consider PAS (11). In the neighbouring countries Germany and Switzerland euthanasia is prohibited, but assisted suicide by any person is not legally punishable, yet there are no legal regulations comparable to those in Oregon (12). The Swiss Penal Code allows assistance in suicide provided that the person seeking assistance has decisional capacity and the person assisting is not motivated by reasons of self-interest. The practice of assisted suicide, mainly implemented by right-to-die

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organizations, is tolerated by society (13). In Germany, assisted suicide is not legally prohibited, but the medical councils of some federal states forbid PAS to their physicians. It is unknown how many ALS patients have the wish to hasten death and would consider PAS (or even euthanasia) in the two countries.

A general wish to die in ALS patients has been associated with depression, hopelessness, lower religiosity scores, and loss of meaning in life (14,15). Studies from the Netherlands and Oregon point to hopelessness and fears of suffocation and dependency as predictors of hastening death, but are inconsistent regarding the influence of quality of life and physical symptoms (10,16–18). Since these studies the evidence base for ALS-specific palliative care has improved and guidelines have been updated (19,20). In addition, many of the initial studies were retrospective and often indirect assessments by post mortem surveys of relatives or physicians (5,8,18). There is a lack of longitudinal studies analysing the temporal stability of WTHD and end-of-life preferences. Moreover, it is unknown whether patients communicate their WTHD to physicians or family caregivers, and how many of the latter would be prepared to assist in hastening death.

We therefore conducted a prospective longitudinal study with ALS patients and their family caregivers in Germany and Switzerland. Results of baseline data in Swiss patients have been published previously (13). Our aims were 1) to determine the prevalence of WTHD and attitudes towards life-sustaining treatment among ALS patients; 2) to investigate the stability of these attitudes during the course of the disease; 3) to explore communication about WTHD and the attitudes of family caregivers; and 4) to determine predictive factors for WTHD.

Patients and methods

Design and participants

A prospective longitudinal cohort study was conducted at two tertiary referral centres in Germany and Switzerland between September 2008 and July 2011. The patients were recruited from multidisciplinary ALS clinics that adhered to guidelines including provision of palliative care to patients and caregivers (20).

Participants had to be at least 18 years old, able to communicate in German and competent as determined by clinical judgement of the physician. In addition, they were only eligible if they had a diagnosis of clinically definite, probable or laboratory-supported ALS according to the revised El Escorial criteria, and if it was not their first visit to the clinic (21). Among 292 consecutive patients, 131 were eligible and 66 consented to study participation. Reasons for refusal were mainly lack of time and tiredness.

All participants were informed about the diagnosis, prognosis, and therapeutic options including percutaneous endoscopic gastrostomy (PEG) and forms of ventilation. The study was approved by the local research ethics committees and all participants gave written informed consent.

Data collection and instrument

Data were gathered through questionnaires that were completed by patients and caregivers simultaneously in separate rooms, either in the clinic or the participant's home. Patients received assistance only insofar as they were physically unable to fill in the forms. Data were collected by a psychologist (Germany) and a theologian (Switzerland), both experienced in empirical social science studies and not involved in patient care.

The baseline survey was performed as soon as the patients had been informed about the option of life-sustaining measures. The follow-up survey was carried out when the patient's scores on the Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS) had deteriorated by ≥ 5 points (but not later than 15 months after baseline). The time taken to complete the questionnaire was up to one hour.

The questionnaire consisted of validated psychometric scales and questions formulated for the purpose of this study. Demographic data contained age, gender, marital status, educational level, and profession. All participants were asked to fill in the Idler Index of Religiosity (IIR), a 4-item scale determining private and public elements of religiosity (22). Patients completed the Hospital Anxiety and Depression Scale (HADS), a 14-item scale (four answers per item, range 0–21 per anxiety and depression subscales, respectively, with high scores indicating high levels of depression or anxiety) (23). Numerical Rating Scales (NRS, 0–10) were applied to assess individual quality of life, intensity of suffering from the disease, feeling of loneliness, and evaluation of how distressing or helpful the survey was perceived.

End-of-life attitudes were elicited at the end of the survey, beginning with the attitudes on PEG, non-invasive and invasive ventilation (4-point response: disfavour, favour under certain circumstances, favour generally, uncertain). Patients' actual WTHD was assessed using the question: "How strong is your current wish to ask others for assistance to end your life prematurely" (NRS 0; 1–10). They were also asked about advance care planning, suicidal ideation, treatment for depression, whether they could imagine asking for PAS or euthanasia, and about communicating the WTHD (yes/no format). Caregivers were asked whether they could imagine helping the patient to hasten death (via suicide assistance or euthanasia, yes/no format).

The questionnaire was pilot-validated among ALS experts and a small group of patients and caregivers. Additional clinical data (ALSFRS, time since diagnosis) were extracted from the patients' records.

Statistical analysis

To compare patients from both countries, *t*-tests and Fisher's exact tests were performed for continuous and categorical variables, respectively. For items with yes/no answers and the 4-point response format the McNemar test was used to compare coincident answers either between baseline and follow-up surveys or between patients and caregivers. For HADS and NRS, mixed-effects models (for quality of life and suffering) or generalized linear mixed models (for score values of loneliness) were applied to compare between baseline and follow-up or between caregivers and patients. Differences of mean and the corresponding *p*-values were calculated. In order to find predictive factors for WTHD, generalized linear models were applied providing odds ratios (OR) and 95% confidence intervals (CI) with corresponding *p*-values. Score values were assumed to be approximately Poisson distributed; however, the models allowed for overdispersion of the Poisson distribution. To avoid multicollinearity, univariate regression models were performed in all cases.

Because of the descriptive nature of the study, no adjusting for multiple comparisons was performed. The level of significance was $p < 0.05$. All analyses were performed using R version 2.12.2 (24).

Results

A total of 66 ALS patients and 62 primary caregivers were enrolled (four patients had no caregiver). Among the caregivers, there were 29 female partners, 20 male partners, six daughters, three sons, one mother, one sister, and two nurses. The participants' demographic and clinical characteristics are listed in Table I. Follow-up of the same cohort was conducted on average 13.2 months after the initial survey and comprised 38 patients and 35 caregivers. A total of 28 patients could not be interviewed a second time because they had either died in the meantime ($n = 24$) or were lost to follow-up ($n = 4$). None of the subjects withdrew from the study. Completing the questionnaire was rated as hardly distressing (NRS 0–10: mean 1.2 (range 0–9) for patients and 3.5 (range 0–10) for caregivers), but moderately helpful (NRS 0–10: mean 4.8 (range 0–10) both for patients and caregivers, baseline data, no change at follow-up). The demographic characteristics were not significantly different for the two recruitment sites (data not shown). The patients recruited in Germany, however, had a lower

Table I. Demographic and clinical data.

	Baseline survey		Follow-up survey	
	Patients ($n = 66$)	Caregivers ($n = 62$)	Patients ($n = 38$)	Caregivers ($n = 35$)
Mean age (SD)	61.9 (10.5)	56.4 (12.7)	59.3 (10.2)	54.2 (12.8)
Gender, *n* (%)				
Female	27 (41)	38 (61)	14 (37)	24 (69)
Male	39 (59)	24 (39)	24 (63)	11 (31)
Marital status, *n* (%)				
Married	53 (80)	49 (79)	30 (79)	29 (85)
Single	4 (6)	6 (10)	3 (8)	5 (15)
Divorced	5 (8)	5 (8)	3 (8)	–
Widowed	4 (6)	2 (3)	2 (5)	–
Level of education*, *n* (%)				
Lower secondary education	39 (70)	42 (75)	20 (67)	22 (71)
Upper secondary education	3 (5)	4 (7)	2 (7)	5 (16)
Tertiary education	14 (25)	10 (18)	8 (27)	4 (13)
Religious affiliation, *n* (%)				
Roman-Catholic Christian	40 (61)	35 (57)	23 (61)	20 (57)
Protestant Christian	17 (26)	14 (23)	9 (24)	8 (23)
Others	1 (2)	1 (2)	1 (3)	1 (3)
None	8 (12)	12 (19)	5 (13)	6 (17)
Recruitment site, *n* (%)				
Switzerland	33 (50)	32 (52)	26 (69)	24 (69)
Germany	33 (50)	30 (48)	12 (32)	11 (31)
ALSFRS (mean, SD)	32.4 (8.7)	–	26.3 (9.8)	–
Mean time since diagnosis, months (SD)	19.7 (26.5)	–	32.9 (29.1)	–

SD: standard deviation; N: number. Numbers may not add up to 100 due to rounding.
*Level of education according to the UNESCO International Standard Classification of Education: lower secondary education = level 2, upper secondary education = levels 3 + 4, tertiary education = levels 5–8.

ALSFRS score at the first survey (mean 28.3 vs. 36.4, $p < 0.001$) and time since diagnosis tended to be longer (mean 24.8 months vs. 14.6 months, $p = 0.19$).

The wish to hasten death (WTHD): prevalence, stability, and communication

Attitudes towards hastening death remained stable between the two surveys (Table II).

No significant differences were found between Swiss and German patients. Forty-two percent of the patients stated that they had thought about committing suicide, and every second patient could imagine asking for PAS or euthanasia. At the baseline survey, nine patients (14%) expressed a current WTHD (mean intensity 3.4 on NRS 1–10, range 1–6). At follow-up, four of them had died or could not be contacted; one who had expressed the WTHD with very slight intensity (0.5 on NRS 1–10) did not express it any more; and the other four reiterated the WTHD with constant intensity. Two patients who had initially not expressed the WTHD did so at follow-up (WTHD at follow-up mean 2.8 on NRS 1–10, range 1–5). More than half of the patients reported that they had talked with others about the option to hasten death, mostly with family members (Table II). One-third of the caregivers could imagine helping the patient to hasten death (31% at baseline and 29% at follow-up). A majority of them could imagine to supply their partner with a fatal drug (70% and 90% over time, $p = 0.37$) and even to administer the fatal drug (45% and 67%, $p = 0.43$).

Attitudes towards life-sustaining treatment

Most patients and caregivers had positive attitudes towards non-invasive ventilation, fewer favoured PEG and even fewer favoured invasive ventilation (Table III). There was a tendency for caregivers to be more often in favour of these treatments than patients. These attitudes did not significantly change over time. However, the number of patients who had written advance directives significantly increased over time. Again, German and Swiss participants did not show significantly different attitudes.

Quality of life and psychological distress

Patients and caregivers both assessed their own quality of life in the middle range, while caregivers reported higher levels of loneliness and suffering at

Table II. The wish to hasten death among ALS patients.

	Baseline survey $n = 66$	Follow-up survey $n = 38$	p-value*
Have you ever thought about committing suicide? *n* (%)			
Yes[+]	28 (42)	22 (58)	0.25
No	35 (53)	16 (42)	
Can you imagine asking a physician for a prescription to commit suicide? *n* (%)			
Yes	33 (50)	17 (45)	1.0
No	30 (46)	21 (55)	
Can you imagine asking a physician to administer a lethal medication? *n* (%)			
Yes	33 (50)	17 (45)	0.68
No	30 (46)	21 (55)	
How strong is your current wish to ask others for assistance to end your life prematurely?			
1–10/10[†]	9 (14)	6 (16)	1.0
0/10	54 (82)	32 (84)	
Have you been under treatment for depression since your ALS diagnosis? *n* (%)			
Yes	9 (14)	4 (11)	1.0
No	54 (82)	34 (90)	
Have you ever talked about someone about the option to hasten death? *n* (%)			
Yes	44 (67)	21 (55)	
No	19 (29)	16 (42)	0.39
With whom did you talk about the option to hasten death? *n* (%)			
With a family member	16 (84)	14 (88)	1.0
With a friend	–	1 (6)	
With another ALS patient	1 (5)	–	
With a chaplain	1 (5)	–	
With a physician	1 (5)	1 (6)	
Would you like to talk with a physician about the option to hasten death? *n* (%)			
Yes	20 (30)	18 (47)	0.72
No	37 (56)	18 (47)	

Numbers of patients giving no answer are not shown. Numbers may not add to 100 due to rounding.
*p-values derived from McNemar tests comparing coincident answers between baseline and follow-up surveys for patients.
[+]Additional questions revealed that in the baseline survey seven participants (11%) and one (2%) had made plans or attempts for suicide, respectively, and eight (21%) and none in the follow-up.
[†]NRS 0–10. The answer 0 signifies no WTHD, while a number between one and 10 signifies a WTHD to varying intensities (mean 3.4, range 1–6, at baseline, and mean 2.8, range 1–5, at follow-up; see also text).

Table III. Attitudes towards life-sustaining treatment.

	Baseline survey	Follow-up survey	
	Patients $n = 66$ Caregivers $n = 62$	Patients $n = 38$ Caregivers $n = 35$	p-value†
In favour* of PEG tube			
Patients, n (%)	35 (55)	22 (58)	1.0
Caregivers, n (%)	39 (64)	23 (66)	0.55
p-value‡	0.52	0.8	
In favour of non-invasive ventilation			
Patients, n (%)	47 (75)	34 (89)	0.073
Caregivers, n (%)	51 (84)	33 (94)	0.22
p-value‡	0.21	0.18	
In favour of invasive ventilation by tracheotomy			
Patients, n (%)	17 (27)	9 (24)	0.61
Caregivers, n (%)	19 (31)	15 (43)	0.39
p-value‡	0.68	0.61	
Advance treatment directive written			
Patients, n (%)	31 (49)	31 (82)	0.0036
Durable power of attorney issued			
Patients, n (%)	20 (32)	14 (37)	0.45

*In the 4-point response format, the answers 'favour generally' and 'favour under certain circumstances' were summed in order to dichotomize the answers.
†McNemar test to compare coincident answers between baseline and follow-up surveys for patients and caregivers.
‡McNemar test to compare coincident answers between patients and caregivers at baseline and follow-up surveys.

both time-points (Table IV). During the course of the disease, however, the patients, but not the caregivers, showed a significant increase in reported levels of loneliness and the feeling to be a burden to others, as well as a lower quality of life. When the patients were asked at baseline the issues that affected them most, 58% mentioned social problems, 30% physical symptoms, 8% psychological suffering and no-one spiritual or religious issues (follow-up: 68%, 22%, 8%, and 0%, respectively). About one-third of the patients reported clinical or borderline anxiety (HADS-A ≥ 8 points, 31% both at baseline and follow-up). Also, one-third (34%) had clinical or borderline depression at baseline, which increased to 50% until follow-up (HADS-D ≥ 8 points). However, only 14% of the patients in the baseline and 11% in the follow-up survey reported that they had been treated for depression any time since the diagnosis of ALS (most of whom actually had clinical depression in HADS-D).

The mean anxiety level was higher among German than Swiss patients (mean HADS-A at baseline 7.4 vs. 5.2, $p = 0.028$; at follow-up 8.3 vs. 5.3, $p = 0.003$), as was that for depression (mean HADS-D at baseline 8.4 vs. 5.4, $p = 0.009$; at follow-up 8.7 vs. 5.8, $p = 0.042$). Quality of life was lower in the German cohort at both time-points (NRS 0–10, mean at baseline 5.2 vs. 6.3, $p = 0.013$; at follow-up 4.0 vs. 5.8; $p = 0.011$).

Factors predicting WTHD

The WTHD was predicted by high levels of anxiety, depression, loneliness, and the feeling to be a burden to others, as well as by a low quality of life (Table V), but not by the ALSFRS score, time since diagnosis or country of residence. This predictability was constant during the follow-up for loneliness, burden to others, and quality of life. Low levels of religiosity at both time-points predicted whether or not patients could imagine asking for PAS and euthanasia.

Discussion

This prospective study of ALS patients and their primary caregivers demonstrates that the WTHD is more common than often reported; while 14% of patients expressed a current WTHD, 50% of them could imagine asking for assistance in hastening death at some time. These numbers are consistent with studies from various regions in North America (10,14,25). A lower prevalence was reported from a previous German interview study with 29 family caregivers of deceased (and formerly non-invasively ventilated) ALS patients according to which only 24% of caregivers thought about PAS and, based on the caregivers' reports, only 10% of patients did so (5). However, this study was qualitative, and may have underestimated the true prevalence of WTHD because of its reliance on post mortem reports by caregivers and its selection of ventilated patients.

Although public discourse about PAS and euthanasia has been cautious in Germany (26), this obviously does not preclude patients from thinking about these options. This is supported by the fact that no differences regarding their attitudes towards hastening death were found between German and

Table IV. Quality of life and psychological distress.

	Baseline survey	Follow-up survey		
	Patients $n = 66$ Carers $n = 62$	Patients $n = 38$ Carers $n = 35$	Difference of mean (95% CI)*	p-value
Quality of life, NRS 0–10				
Patients' mean (SD)	5.7 (1.8)	5.2 (2.0)	−0.63 (−1.24, −0.01)	0.045
Caregivers' mean (SD)	5.9 (2.1)	5.5 (2.1)	−0.41 (−1.00, 0.17)	0.16
Difference of mean (95%CI)*	0.2 (−0.4, 0.8)	0.3 (−0.5, 1.2)		
p-value	0.55	0.45		
Loneliness, NRS 0–10				
Patients' mean (SD)	1.6 (2.0)	2.3 (2.3)	0.42 (0.08, 0.75)	0.016
Caregivers' mean (SD)	2.7 (3.0)	3.3 (2.8)	0.15 (−0.14, 0.43)	0.31
Difference of mean (95%CI)*	1.1 (0.3, 1.9)	1.0 (0.0–2.1)		
p-value	0.01	0.053		
Suffering, NRS 0–10				
Patients' mean (SD)	5.2 (2.6)	4.6 (2.1)	−0.17 (−0.87, 0.53)	0.62
Caregivers' mean (SD)	6.6 (2.4)	6.3 (2.4)	−0.16 (−0.88, 0.56)	0.66
Difference of mean (95%CI)*	1.4 (0.6, 2.1)	1.7 (0.7, 2.7)		
p-value	<0.001	0.001		
Feeling to be a burden, NRS 0–10				
Patients' mean (SD)	3.8 (3.1)	4.7 (2.7)	0.25 (0.02, 0.49)	0.037
Anxiety, HADS-A				
Patients' mean (SD)	6.3 (4.1)	6.3 (3.0)	0.02 (−0.16, 0.2)	0.85
Borderline anxiety†, n (%)	11 (17)	10 (26)		
Clinical anxiety†, n (%)	9 (14)	2 (5)		
Depression, HADS-D				
Patients' mean (SD)	6.9 (4.1)	6.7 (4.1)	0.07 (−0.1, 0.24)	0.4
Borderline depression†, n (%)	13 (20)	10 (26)		
Clinical depression†, n (%)	9 (14)	9 (24)		

NRS: Numerical Rating Scale; SD: Standard Deviation; CI: Confidence Interval; HADS: Hospital Anxiety and Depression Scale ("A" for subset anxiety and "D" for subset depression).
*Differences of mean calculated using mixed-effect models (for quality of life and suffering) or generalized linear mixed models (for loneliness). The comparison of the patients' and the caregivers' mean is presented vertically; the comparison of the mean at baseline and follow-up (for patients and caregivers) is presented horizontally.
†Borderline anxiety: 8–10 out of 21 points in HADS-A; Clinical anxiety 11–21 out of 21 points. Borderline depression 8–10 out of 21 points in HADS-D; Clinical depression 11–21 out of 21 points.

Swiss patients. Although euthanasia is legally prohibited in both Germany and Switzerland, in our study the percentage of patients that could imagine euthanasia was the same as for PAS which is lawful. While there are no official statistics about PAS prevalence in either country (as physicians are not obliged to report such cases), a representative poll among German physicians found that 50% of general practitioners have been asked by patients for PAS (27). In Switzerland, and to a lesser degree in Germany,

Table V. Predictive factors for the wish to hasten death (patients, baseline interview, n = 66).

	Odds ratio	95% CI	p-value
Current wish to hasten death			
Anxiety (HADS-A)	1.18	1.10, 1.26	<0.001
Depression (HADS-D)	1.10	1.01, 1.20	0.027
Loneliness	1.20	1.02, 1.38	0.021
Burden to others	1.14	1.03, 1.25	0.0076
Quality of life	0.89	0.82, 0.95	0.0013
Could imagine asking for physician-assisted suicide			
Religiosity (IIR)	0.55	0.42, 0.72	<0.001
Could imagine asking for euthanasia			
Religiosity (IIR)	0.53	0.41, 0.69	<0.001

Generalized linear model testing the predictive value of psychosocial and spiritual factors on the wish to hasten death (only significantly predicting factors are shown). Odds ratio indicates either the regression slope or the ratio yes vs. no for religiosity.
HADS: Hospital Anxiety and Depression Scale ('A' for subset anxiety and 'D' for subset depression); IIR: Idler Index of Religiosity; CI: confidence interval.

there are private, non-medical organizations (e.g. Exit, Dignitas, SterbeHilfe Deutschland e.V.) that offer assistance in suicide. Their statistics, though uncontrolled, show that ALS is a prominent disease group among the patients dying from PAS (28,29).

The most important finding of this study is that patients' WTHD and attitudes towards life-sustaining treatment remained stable during the average 13 months follow-up period. An earlier American study with a cohort of terminally ill patients found that a majority changed their preferences towards euthanasia and PAS in both directions after two to six months (30). An explanatory hypothesis may be that cancer and cardiovascular diseases usually follow a fluctuating disease trajectory raising hopes for a cure, while ALS follows a predictably declining disease course. Accordingly, the only prospective study with ALS patients reported that the wish to die significantly predicted the same wish several months later (14).

The observed stability of ALS patients' attitudes towards life-sustaining treatment warrants trust in their advance treatment directives. A high percentage of our patient cohort made use of advance directives, comparable to data from a large American study among elderly patients (31). It is known that end-of-life preferences show a higher stability in those who issue advance directives (32). In addition, terminally ill people are more concerned about the binding force of their directives than non-terminally ill (33). While German and Swiss jurisdictions have recognized advance directives for some time, both countries recently introduced laws to ensure this (34).

Interestingly, the aggravating symptom burden toward the end of life did not increase the WTHD among our ALS patients. Conversely, the fact that all of them were enrolled in multidisciplinary, ALS-specific palliative care programs did not allay their WTHD. The predictability of WTHD by factors such as anxiety, depression, loneliness and quality of life opens up the opportunity for therapeutic intervention. In any event, the assertion of some policy makers and hospice lobbyists that the provision of palliative care is sufficient to prevent the insurgence of WTHD is not supported by our data.

Our study shows that psychosocial factors and comorbidities such as anxiety and depression, but also loneliness, the perception to be a burden to others, and a low self-perceived quality of life, predict WTHD. Highly religious patients seem to be less inclined to imagine hastening death. These findings corroborate an emergent set of data from other studies (2,8,10,14,16,18,25). Although one-third to half of ALS patients in our study had borderline or clinical depression in the HADS, only 14% had been treated for depression. Although we did not gather objective data from clinical records as to how many patients were diagnosed and treated for depression or anxiety, this still raises the question of under-treatment of psychiatric comorbidity in ALS, which may be due to many symptoms of depression being similar to late-stage ALS symptoms.

Other studies also found a correlation between the WTHD of ALS patients and the distress of family caregivers (2,35). Of note, we found that caregivers had higher levels of loneliness and suffering than patients. It is increasingly acknowledged that ALS care must include offering specific treatment and support for the family caregivers (36,37). This is all the more relevant because we found that relatives were the only ones with whom ALS patients communicated about WTHD. We also found that 30–47% of patients would have liked to talk to their doctor about it, but almost no-one did. Thus, physicians should be prepared to proactively address the question of WTHD, which could ease distress for both the patient and the caregivers and may even prevent some patients from hastening death (38).

Our study has several limitations. First, we did not assess the frequency of the act of hastening death and could not use validated scales for every measure (e.g. quality of life), due to methodological and patient-related reasons. Secondly, the drop-out rate at follow-up was high due to intervening death of patients, as we wanted to study patients in their last phase of life. Thirdly, our results may only be cautiously generalized to other regions or countries because cultural factors, including legal regulations, play a large role in end-of-life attitudes (39).

In conclusion, our data show that a significant proportion of patients with ALS and their caregivers think about hastening death much more than they discuss the issue with their physicians, and that at least half would like to so do. By contrast, the actual WTHD was present only in a minority of patients, but remained stable during the disease course and correlated with psychosocial factors rather than symptom burden. Despite ongoing treatment in a multidisciplinary clinic with palliative care practices, discussing death and recognizing depression in ALS patients are still challenges. There is evidence for under-treatment of psychiatric comorbidities. Sustained efforts towards prevention, early identification and treatment of psychosocial distress in ALS patients and their caregivers are clearly warranted.

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