REVIEW ARTICLE

Medicolegal Assessment of The Ability to Drive a Motor Vehicle in Persons With Epilepsy

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SUMMARY

Background: Determining whether a patient with epilepsy ought to be allowed to drive a motor vehicle is a challenging matter for the physician. This situation is fraught with medicolegal uncertainties, not just for general practitioners, but also for specialists and occupational health physicians.

Methods: A case is reported and discussed in the light of a selective review of the literature and the German medicolegal assessment guidelines for the determination of the ability to drive a motor vehicle.

Results: The risk associated with driving can be estimated as a function of the type of epilepsy from which the patient suffers and of the frequency of seizures. The expert can then express an opinion on the basis of this assessment, within the framework of the German medicolegal assessment guidelines and the German Driver Licensing Act ("Fahrerlaubnisverordnung"). There is no general duty of physicians to report a patient's unsuitability for driving a motor vehicle, but physicians have a right to report to the authorities that a patient should not be allowed to drive when the patient fails to comply with a recommendation not to drive and when a higher legally protected interest is at risk.

Conclusions: The drawbacks of secondary prevention, as illustrated by the case presented here, could be minimized if the treating physician took the patient's occupational history and gave the relevant advice early on in the course of the patient's illness. Likewise, early counseling about driving would lessen the need for physicians to tell the authorities that patients should not drive in cases where the public interest overrides the patient's right to confidentiality.

In the course of medical practice, specialists in a variety of areas are confronted with the question as to whether patients with epilepsy can perform specific activities, or whether they may be subject to qualitative and/or quantitative restrictions.

According to the Information center of the German Society for Epileptology, the prevalence of manifest epilepsy in the population lies between 0.5% and 1%, corresponding to 400 000 to 800 000 people in Germany. Moreover, it is thought that ca. 5% of the population suffer an epileptic seizure at least once in the course of their lives, without developing epilepsy. About 50% of cases of epilepsy start before age 10; about two thirds of cases start before the age of 20 (1, 2). It follows that these problems often occur when the patient starts work, or even before. There is another peak in the incidence in older patients (>75 years old) (3). With optimal therapy, a remission is achieved in up to 70% of cases. Cognitive development is mostly normal (4).

The German Driver's License Act (Fahrerlaubnisverordnung, FeV) is one source of recommendations and regulations for the role of epileptics in road traffic and in working life. This act is a component of transport law and therefore legally binding. In addition, the principles of the German Social Accident Insurance Institutions provide an introduction (5). This corresponds to the status of current knowledge in occupational medicine and presents the responsible physician with a description of how to establish suitability for driving a vehicle professionally. These rules are intended to standardize the procedures for occupational medical examinations.

The Act on Occupational Medical Care came into force on 24 December 2008 and, since then, the examination according to G25 (health surveillance examination for driving, steering and monitoring work) has no longer been a component of the occupational medical health examination in Germany, but is considered as a test of suitability or qualification (6). This examination for driving at work may indirectly become legally binding as a result of the Act on Safety at Work (7). It does not however represent a legal norm. If there is any risk to third parties, it is therefore advisable for the employer to specify a regular test of suitability as a condition for this activity.

The health disorders named in trade association principle G25 (driving, steering and monitoring work) are

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TABLE 1

Classification of convulsive disorders in occupational medicine by the risk of injury

Cat-egory	Type of convulsive disorder
A	Seizures with disturbance of the voluntary motor functions (twitching, cramp, muscle relaxation), reduced state of consciousness, but without a fall, e.g. simple local seizures with motor symptoms, myoclonic seizures
B	Seizures with reduced state of consciousness and interruption of actions, but without a fall and without motor symptoms, e.g. simple absences, short complex focal seizures without motor symptoms
C	Seizures with a fall, with or without reduced state of consciousness, with or without disturbances to the voluntary motor functions (twitching, cramp, muscle relaxation), e.g. primary and secondary generalized grand mal, Jackson seizures extending over the lower limbs
D	Seizures with reduced state of consciousness and inappropriate actions, without a fall, e.g. complex focal seizures
0	Seizures without relevance to occupational medicine (no fall, no restriction to consciousness, no motor disorders), sensory symptoms or mental symptoms which do not impair function
	The following conditions are also regarded as being without relevance to occupational medicine: – Freedom from seizures for more than 2 years – Seizures exclusively during sleep for more than 3 years – Seizures strictly linked to triggers for more than 3 years – Seizures which strictly occur within one hour of waking for more than 3 years

Taken from: Elsner H, Thorbecke R: Anfallshäufigkeit und Verletzungsrisiko am Arbeitsplatz. Epilepsie-Blätter 1994; 7: 84–9. Printed with kind permission from Steinkopff Press, Heidelberg

mostly incompatible with the safe performance of this work. They therefore usually justify reservations about the subject's health. As it is easy to overlook some of these health disorders in an orientating physical examination, they must be specifically and carefully sought during an examination in accordance with G25 (5). In the following case report, the problems will be illustrated which may face primary care physicians, occupational physicians, and other specialists in the care and treatment of epileptic employees.

Epilepsy can, in principle, call into doubt the ability of an employee to perform specific activities. If repeated seizures attest severe impairment of working ability, thus showing that the person is unsuitable for the intended work, failure to mention such an illness may lead to contestation of an employment contract because of willful deceit, and the employment contract can be declared void (8). In the special case of driving, steering or monitoring activities—as performed by a professional driver or by a person who steers and monitors industrial production plants and control stations—not only is the risk to the individual important, but also the impairment to safety at work, in particular, the risk to third parties.

The informed responsible physician is in an area of tension between medical confidentiality and the con-

sideration of legally protected interests (9). He must first decide which legally protected interest must be considered most important. Only then can he decide whether to maintain medical confidentiality or whether it is necessary to violate this.

The questions arising from the following case are answered on the basis of the Guidelines for the Suitability to Drive a Motor Vehicle, the German Driver Licensing Act, extracts from acts on occupational medical care and on safety at work, together with a selective search of the literature.

Case description

This 50-year old man had been working for 34 years as excavator operator for a building firm. During a period as patient in the Department of Neurology in a university hospital, he was referred for consultation to the Outpatient Clinic for Occupational Medicine because of the following situation.

Since the age of 2, he had been suffering from symptomatic epilepsy, as a consequence of cranial bleeding after a fall. In spite of treatment with anticonvulsive drugs (three times daily 200 mg carbamazepine; serum concentration within the upper therapeutic range), on about 5 days per month, he suffered from multiple complex seizures within the course of a day, sometimes accompanied by loss of consciousness. He used to experience auras, in the form of giddiness and nausea, about 10 seconds before the actual seizures, so that he could stop his excavator himself. However, the latency period between aura and seizure was becoming shorter and shorter, or had even disappeared, and this had resulted in an accident, without personal injury.

It was also established that the patient drove to his place of work every day in his own car. This implied that there was not only a risk to third parties at the workplace, but also during his participation in public traffic.

He had concealed the intermittent symptoms from his colleagues, in so far as was possible, or maintained that they were not caused by epilepsy.

During the initial examination on employment and at the subsequent occupational medical health examinations according to G25, which he said had been performed regularly, the patient had always concealed his epilepsy, out of fear for the loss of his occupation. Because of the false information on prior diseases and drug intake, no further action had been taken and no special examinations had been performed. The previous seizures during work had never been reported to his employer and his colleagues had never reported the incidents to their superiors or to the employer.

The patient claims that his responsible family physician had never informed him that he was unsuitable to drive. After one neurologist had instructed him and provided him with information, he failed to visit him again and had transferred to another neurologist. There had never been any exchange of information between the family physician, the neurologist, and the occupational physician.

BOX

Differentiation on the basis of freedom from seizures and frequency of seizures

- **No freedom from seizures:** It is assumed that the patient is fit to drive if he suffers simple focal seizures without impairment to driving, once the clinical course of his condition has been observed for at least a year. Three-year observation is demanded for seizures exclusively linked to sleep.
- **Freedom from seizures under drug treatment:** For the first time, it is stated that there is essentially no risk of recurrence of the seizures, once the patient has been free of seizures for one year. This interval is increased to 2 years for long-term epilepsy which has previously been resistant to treatment. Moreover, the patient may not suffer from organic brain changes which impair his performance, such as marked disturbances in concentration or in his ability to react. There should be no perceptible risk of further seizures. Follow-up examinations must be performed after 1, 2 and 4 years.
- **Freedom from seizures after an operation:** Freedom from seizures for 6 months is adequate to assume suitability to drive, assuming that there are no special abnormalities.
- **Unique seizure:** Fitness to drive is assumed after 3 to 6 months, if the seizure was not linked to specific conditions and when there is no evidence that the seizure was linked to brain damage or that idiopathic epilepsy was developing.
- **Event-induced seizure:** An event-induced seizure is a seizure which is linked to specific conditions. In this case, suitability to drive is assumed after 3 to 6 months, if it can be assumed that the provocative conditions, such as lack of sleep, alcohol consumption, acute disease, fever, intoxication or metabolic disorders, are no longer present.
- **Discontinuation of antiepileptic drugs:** Patients whose antiepileptic treatment is being discontinued are advised not to drive during the period of discontinuation or for 3 months afterwards, as there is an increased risk that seizures may recur.

Statement of the problem

The patient had attempted suicide 10 years previously. Because of his progressive and stressful symptoms, he had now become suicidal again. He emphasized his anxiety about a potential loss of his occupation and the resulting threat to his financial survival, as there was no chance of being transferred within the company and he felt himself incapable of performing other duties. He repeatedly pointed out the obligation to medical confidentiality. He rejected the possibility of anonymous information from the occupational physician.

It was pointed out that the responsible authorities had to be notified because of the risk to third parties and that this would result in withdrawal of the driver's license. The patient then openly threatened suicide.

Results of the examination

Magnetic resonance imaging of the skull showed a left temporal defect of the medullary layer with slight perifocal gliosis and this may be the correlate of a defect after bleeding. There were also 2 small gliosis zones in the immediate vicinity of the lobus insularis on the left. In particular, the changes near the cortex may be epileptogenic foci.

If there is a pattern of changes induced in the electroencephalogram (EEG) by hyperventilation, this must always be regarded as pathological. In this particular patient, provocation with hyperventilation caused high-voltage and steep waves, with a frequency of 4 to 7 Hz, as well as left temporal spike wave complexes. These wave forms must be regarded as being unambiguously epileptic (10). In accordance with this, an epileptic

seizure with loss of consciousness was observed while the EEG was being taken.

These complex (focal) partial seizures often exhibited three typical phases:

- Aura with sensomotor symptoms (sometimes described by the patient)
- Core of the seizure, with motor discharges and loss of consciousness
- Postparoxysmal semiconsciousness, with reorientation phase (10).

A seizure is rarely recorded in the EEG and then only by chance and is not the precondition for a diagnosis of epilepsy. More commonly, patterns typical of epilepsy are found between two seizures.

Legal principles and guidelines

In order to obtain an overview of the legal framework and the current guidelines, it is necessary to be familiar with the European classes of driver's license. It is also necessary to know the classification of the forms of epilepsy, the severity of their symptoms and their frequency. The potential risk may be deduced from the classification into occupational medicine risk categories according to Elsner and Thorbecke (*Table 1*). On this basis, affected persons can be provided with medical advice about the possible risks to themselves or to third parties.

For the Guidelines for the Evaluation for Suitability for Driving Motor Vehicles (11), the driver's licenses are classified into 2 groups, in accordance with Appendix III of the EU Guideline and Appendix 4 of the German Driver's License Act (FeV):

TABLE 2

Appendix 4 of the German Driver's License Act (Fahrerlaubnisverordnung, FeV) (to §§ 11, 13 and 14)

Diseases, Deficits	Suitability or conditional suitability		Restrictions or conditions for conditional suitability	
	Classes A, A1, B, BE, M, S, L, T	Classes C, C1, CE, C1E, D, D1, DE, D1E, FzF	Classes A, A1, B, BE, M, S, L, T	Classes C, C1, CE, C1E, D, D1, DE, D1E, FzF
6. Diseases of the nervous system				
6.1 Diseases and consequences of injuries to the bone marrow	Yes Depending on the symptoms	No	Follow-ups if clinical course progressive	
6.2 Diseases to the neuromuscular periphery	Yes Depending on the symptoms	No	Follow-ups if clinical course progressive	
6.3 Parkinson's disease	Yes In mild cases and with successful therapy	No	Follow-ups after 1, 2 and 4 years	
6.4 Disturbances to brain activity linked to blood circulation	Yes After successful therapy and if the acute episode has subsided without the risk of recurrence	No	Follow-ups after 1, 2 and 4 years	
6.5 States after brain injuries and brain operations, congenital or early infantile brain damage				
6.5.1 Craniocerebral injuries or brain operations without substance damage	Yes Generally after 3 months	Yes Generally after 3 months	Follow-up if risk of recurrence after operations for brain disease	Follow-up if risk of recurrence after operations for brain disease
6.5.2 Substance damage from injuries or operations	Yes With consideration of motor disturbances, chronic organic brain syndromes affecting the psyche or personality	Yes With consideration of motor disturbances, chronic organic brain syndromes affecting the psyche or personality	Follow-up if risk of recurrence after operations for brain disease	Follow-up if risk of recurrence after operations for brain disease
6.5.3 Congenital or early infantile brain damage (see 6.5.2)				
6.6 Convulsive diseases	Yes, in exceptional cases, if there is essentially no risk of recurrence of seizures, e.g. 2 years without seizures	Yes, in exceptional cases, if there is essentially no risk of recurrence of seizures, e.g. 5 years without seizures and without therapy	Follow-ups after 1, 2 and 4 years	Follow-ups after 1, 2 and 4 years

- Group 1: Drivers of vehicles of classes A, A1, B, BE, M, L, and T (cars, motorcycle, special classes)
- Group 2: Drivers of vehicles of classes C, C1, CE, C1E, D, D1, DE, D1E and driver's license for the transport of passengers (truck and bus classes).

Building vehicles, such as the excavator, which are designed to drive at more than 25 km/h or more than 40 km/h, belong to driver's licenses class L and class T, respectively, and are therefore in Group 1 (11):

"A person who suffers epileptic seizures or other seizure-like reduced states of consciousness, is generally incapable of fulfilling the requirements for driving vehicles, so long as there is an essential risk of recurrence of seizures." There is no precise definition of the term "essential risk," although one of the references is to seizure-free period. The following applies in general:

- For the vehicle classes in Group 1, suitability to drive can be attested if there has been no recurrence of seizures after 12 to 24 months. Drug therapy is acceptable.
- For the vehicle classes in Group 2, suitability is excluded. The exception is freedom from seizures for 5 years without drug therapy.

In the 6th edition (2000) of the Guidelines for the Evaluation for Suitability for Driving Vehicles (11), a distinction is made on the basis of the frequency of the seizures or the period of freedom from seizures (*Box*). The recommendations to assume current suitability to drive—or to specify a seizure-free interval after which suitability to drive can be assumed again—are based on these guidelines.

After a unique seizure or an event-induced seizure, it should be assumed that there is essentially no risk of recurrence, if there is no evidence for the start of idiopathic or symptomatic epilepsy in subsequent diagnostic testing and no longer any provocative conditions, such as lack of sleep, alcohol consumption, or metabolic disorders. Suitability to drive in these cases is assumed after 3 to 6 months free of seizures. If the dose of anticonvulsive medication is tapered, the patient must be advised not to drive during the phase of discontinuation or in the following three months, as there is increased risk of recurrence. A new feature in this overview (11) is that it is being assumed that there is essentially no more risk of recurrence if a patient under drug treatment has had no seizure for a year. For epilepsies with long-term therapy resistance, this period is raised to 2 years. This period used always to be 2 years for this group of patients.

Appendix 4 (to §§ 11, 13, and 14) of the German Driver's License Act (12) presents the evaluations of the suitability and conditional suitability for driving vehicles for persons with some specified diseases (*Table 2*). Under point 6.6, suitability or conditional suitability for vehicles of classes L and T is exceptionally assumed for persons with seizures, if there is no longer any essential risk of recurrence of the seizures. For example, this may mean 2 years free of seizures. How-

ever, this evaluation only applies to the driver's license for specific vehicle classes (Group 1), which usually includes driving an excavator. On the other hand, suitability to drive a truck or to transport passengers (Group 2) is refused for persons with a convulsive disorder (more than one seizure). Suitability can exceptionally be assumed if there has been freedom from seizures for 5 years without therapy. It is then urgently recommended to obtain an additional expert opinion from a physician "qualified in traffic medicine in accordance with §65 of the FeV."

The frequency of accidents with epileptics is not statistically greater than with the average population (13).

Procedure in the specific case

As this patient suffered epileptic seizures with loss of consciousness on several days in the month, lack of suitability had to be assumed in the sense of Appendix 4 of the German Driver's License Act. As other combination therapy had already been unsuccessful and an operation for epilepsy was not possible, there was no way to improve the patient's therapy.

The patient's driver's license had to be withdrawn, as his participation in traffic was linked to considerable risk, both to himself and to others. The fact that the patient had driven in traffic for decades without being involved in an accident and that he had driven the excavator without an accident did not free the responsible physician from having to consider the legally protected interests. It also had to be considered that the patient himself reported that his illness had continued to deteriorate and that the auras were more and more often absent.

The patient was informed in detail—both orally and in writing—about his lack of suitability to drive and about possible legal consequences if he chose to ignore the suspension of his driver's license announced at the same time. The patient was treated for a further week and then was no longer at risk of suicide. He was then released from hospital, unfit for work. Discussions with the works physician during this period had shown that it was not possible to transfer the patient to another job within the company, as would have been desirable.

Because of the increased frequency of the seizures, the patient remained unfit to work for the following 5 months. At the end of this period, the patient was given a pension because of a total loss of earning capacity.

After the patient had grasped the risks to himself and to others, he had returned the driver's license. Nevertheless, he suffered from the resulting loss of flexibility and the (presumed) loss of social status.

Conclusions

Analysis of this case indicates weaknesses in secondary prevention, particularly with respect to the method used (medical history), which might theoretically have major consequences. Case-related anonymous research by experts and German Social Accident Insurance Institutions has led to inconsistent results with respect to the

question of medical confidentiality and the legal and job-related consequences. This patient did not release his physicians from the obligation to medical confidentiality.

If the patient is unsuitable to drive, the responsible physician must clearly and unambiguously explain this to him. This includes the medical statement on lack of suitability as driver of a vehicle. The explanatory discussion should be carefully documented in the patient file. It is urgently recommended that the patient should sign the record of the explanatory discussion and the "medical driving prohibition."

There are no general reporting requirements for the physician. He/she nevertheless possesses the right to report to the traffic authorities patients without insight who have unambiguously expressed the intention to ignore the medical driving prohibition. Paragraphs 138 and 139 of the German Criminal Code lay down that a planned criminal act must be reported. If a physician fails to report a criminal act, this is only exempted if he has learnt of this in his professional function and if he had seriously attempted to stop the person from performing the act or to render it unsuccessful. If a physician considers that public safety is a higher legally protected interest than medical confidentiality and if he considers that the former is at risk, he may violate medical confidentiality and report an epileptic who ignores the regulations, in spite of the suspension of his driver's license (9).

But the risk must be real. For example, if a patient who has never had an epileptic seizure under drug treatment ignores the suspension of his driver's license when his anticonvulsive medication is being tapered or discontinued, the general opinion is that this does not represent a real risk.

However he or she may proceed, any physician who reports a patient is in a difficult legal environment.

In the present case, the problems might have been avoided if an early history had been taken and the patient had then been advised to choose another occupation. At the very least, it might have been possible to transfer the patient within the firm or to retrain him. This could have avoided risks to the patient and to third parties, as well as the accompanying psychosocial complications.

Both primary care physicians and medical specialists require training and information, if they are to recognize workplace-related restrictions in a timely manner and investigate possible solutions in collaboration with the occupational physician and the patient himself. With respect to the elements of the occupational medical health examinations, it can be stated that historical information on serious disease suffices to support reservations about the suitability for "steering, driving and monitoring activities." For occupational physicians, this means that an additional expert report from a physician "qualified in traffic medicine in accordance with §65 of the FeV" is needed, even if there are only indications of possible risk to the patient himself or to others. Once such a statement is available, this can

serve as the precondition and basis for the decision about employment within the firm. Once the expert report has been issued to the subject, no additional release from medical confidentiality is needed.

Conflict of interest statement

The authors declare that no conflict of interest exists according to the guidelines of the International Committee of Medical Journal Editors.

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KEY MESSAGES

- 0.5% to 1% of the German population suffers from manifest epilepsy; ca. 5% have an epileptic seizure at least once in life.
- In spite of recommendations and regulations in guidelines and acts, there is repeated uncertainty about the possibilities of employing epileptics and whether they should be allowed to drive.
- If an epileptic patient is unfit to drive, this must be explained to him in detail, together with the possible legal consequences if he ignores the suspension of his driver's license. It is essential that this should be documented.
- The physician has no general obligation to notify the authorities, but he has the right to notify the authorities if a higher legally protected interest is at risk.
- If an early medical history is taken and secondary prevention is improved, this might help to remove the taboo on this problem and make it possible to advise the patient in good time.

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