



Epilepsy in the elderly – in the focus of science

NeuroNews.de spoke to an epilepsy expert from the Epilepsy Center in Erlangen/Germany

According to epidemiological estimates, the population pyramid in the year 2030 will have changed significantly compared to the current situation: about a third of all patients will be more than 65 years of age. This shift will also increase the prevalence of epilepsy in the elderly. However, as the number of elderly persons with unidentified, yet existing, epilepsy is obviously very large, it is difficult to make accurate predictions about the current incidence and prevalence of epilepsy in this age group. There is a significant need for epidemiological research in this area. As the subject has not been adequately addressed in the clinical and scientific community, it also will be necessary to provide more information and initiate specific activities in connection with epilepsy in the elderly. For instance, one should not overlook the fact that reduced absorption, impaired kidney and liver function, and the altered water and albumin content in the body are liable to change the pharmacokinetics of anti-epileptic agents. This, in turn, will significantly influence the dosage of the prescribed substances. The use of enzyme-inducing anti-epileptic medications should be avoided as far as possible. This, and further scientific aspects were among the many subjects connected with epilepsy research that were addressed at the 46th Annual Meeting of the German Society of Epileptology, which was held at the beginning of May 2006 in Strasbourg. During this event, the editors of NeuroNews had the opportunity to conduct an exclusive interview with Prof. Dr. Hermann Stefan, Director of the Epilepsy Center in Erlangen (ZEE), Friedrich-Alexander University Erlangen. The subject of the interview was epilepsy in the elderly, its diagnosis and treatment.



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Interview with Prof. Dr. Hermann Stefan, Director of the Epilepsy Center in Erlangen (ZEE), Friedrich-Alexander University Erlangen, Nuremberg



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NeuroNews: Professor Stefan, what are the principal characteristics of epilepsy in middle age and what are the leading symptoms of epilepsy in the elderly?

Prof. Stefan: Focal seizures occur more frequently in elderly patients with epilepsy than in middle-aged adults with epilepsy. The former primarily suffer from symptomatic epilepsy, usually caused by circulatory disturbances or even concomitant diseases in advanced age. Epilepsy in the elderly is generally rendered complex by comorbidities

because elderly patients often do not suffer from epilepsy alone but also from cardiovascular or bone disease, kidney dysfunction or cognitive impairment, and additional internal or psychological problems.

NeuroNews: What is the prevalence of epilepsy in the elderly in Germany and what are its causes?

Prof. Stefan: Investigations conducted at our Epilepsy Center in Erlangen show that the frequency of epilepsy among

persons older than 65 years of age, living in homes for the aged and rest homes in Germany is 1.5 to 1.8 per cent. However, we also found a large number of aged individuals suffering from epilepsy although their condition was yet not identified as epilepsy. Thus, it is very difficult to provide exact data about the incidence and prevalence of epilepsy in the elderly. Here we find an obvious and significant deficiency in the identification of the disease. We all know that the general population, including patients who need treatment, is increasingly older today. According to estimates, in the year 2030 the age pyramid will have been altered to such an extent that about a third of all patients will be older than 65 years of age. Thus, one must anticipate an increase in the prevalence of a large number of diseases in the aged. Obviously, the same will be true for epilepsy. In my opinion this calls for much more research, particularly in the field of epidemiology, in order to establish the actual incidence and prevalence of epilepsy in the elderly in Germany. These figures will probably be much higher than those we have assumed thus far.

NeuroNews: *Would you say that the subject of epilepsy in the elderly and its treatment is given sufficient attention in clinical routine and medical practices as well as in the scientific community?*

Prof. Stefan: Quite often I wonder why I don't see all those elderly individuals who suffer from epilepsy. Why don't they come to us for consultation? Who treats them and who takes care of them? Who diagnosed epilepsy in their cases? Was it the family physician or has their

epilepsy not yet been identified at all? How many neurologists do, in fact, actually examine these patients? The subject of epilepsy in the elderly certainly is not given sufficient importance. It will have to be given much more attention in the field of science as well as in clinical routine.

»Neither in clinical routine and medical practices, nor in the scientific community, is sufficient attention given to the subject of epilepsy in the elderly.«

NeuroNews: *Do you think there is a need for more information and greater involvement on the part of medical colleagues, particularly practicing physicians, with regard to epilepsy in the elderly, its diagnosis and treatment?*

Prof. Stefan: Yes, epilepsy in the elderly is marked by specific characteristics which differ significantly from epilepsy in middle-aged individuals. Pharmacology and pharmacokinetics are also affected by these factors because advancing age is associated with a large number of changes in the entire human organism. This concerns, for instance, the body's albumin and water content, kidney function, gastrointestinal absorption, and also liver metabolism. Due to this altered metabolic condition, medications – including anti-epileptic agents – have to be administered at a much lower dose in elderly individuals. I believe there is a need for more information on this subject. One

should also consider the need to set up a better treatment network, for instance between nursing homes, neurologists and epilepsy centres.

NeuroNews: *In Erlangen you are the director of one of the most modern epilepsy centres in Europe, where you apply the most recent therapeutic approaches. What therapeutic options are currently available for adult epilepsy patients?*

Prof. Stefan: Established and proven, as well as new, anti-epileptic agents such as valproate (e.g. Orfiril® long), oxcarbazepine (e.g. Apydan®), lamotrigine (e.g. Plexxo®) or carbamazepine (e.g. T(r)imonil®), topiramate etc. are available for adult patients suffering from epilepsy. The range of anti-epileptic substances is large enough to provide individual treatment. The individual medications are administered in increasing doses until the tolerance limit is achieved and/or then combined also with each other. When pharmacotherapy fails to control seizures or causes undesired side effects, it may be necessary to conduct epilepsy surgery in some cases. In addition to epilepsy surgery one may, for instance, perform vagus nerve stimulation or, in individual cases, selective irradiation in the area of the seizure focus. Finally, of course, one may also use behavioural therapy or, in cases of hormone-dependent epilepsy one may administer hormone treatment.

NeuroNews: *In what way does anti-convulsive pharmacotherapy for middle-aged patients differ from anti-convulsive pharmacotherapy in the elderly and what aspects must be given specific attention when adminis-*

tering anti-convulsive pharmacotherapy in the elderly?

Prof. Stefan: As the surface of the absorbent mucosa is frequently reduced, gastrointestinal absorption is impaired in the elderly. Besides, liver function is impaired by the reduced volume of the liver and the lesser activity of hepatic enzymes. Apart from these factors, particularly renal function and, as a result thereof, renal clearance, are altered in advanced age. Interestingly, this cannot be identified by determining the patient's creatinine levels because creatinine levels hardly change in the course of an individual's life. Creatinine clearance does reduce with age, and also the elimination of medications by the renal pathway changes. Therefore, medications eliminated by the renal pathway must be administered at a much lower dose in aged individuals. Besides, one should not forget the fact that elderly people frequently have to take a large number of medications and these may interact with anti-epileptic substances.

NeuroNews: How important is compliance, particularly with regard to the number and frequency of tablets to be taken by elderly patients suffering from epilepsy?

Prof. Stefan: Compliance problems are quite common in elderly patients suffering from epilepsy. Particularly in these cases, one should carefully monitor the intake of medications. This is best achieved by administering epilepsy medications that need to be taken only once or twice daily, such as valproate (e.g. Orfiril® long) or lamotrigine (e.g. Plexxo®). Substances that need to be administered three times

daily are usually more problematic in terms of compliance.

NeuroNews: Why is it important not to use enzyme-inducing anti-epileptic agents when treating epilepsy in the elderly? Do you believe specific drugs should be given preference in this setting? If yes why?

Prof. Stefan: Enzyme inducers mainly include anti-epileptic agents such as carbamazepine, phenytoin, phenobarbital and primidone. These substances have a significant enzyme-inducing effect, which may lead to osteoporosis or aggravate osteoporosis in elderly individuals, and also impair the metabolism of other medications. In elderly epileptic patients one should try to select anti-epileptic agents with a milder enzyme-inducing effect, such as gabapentin, levetiracetam or topiramate. In this context one should be aware of the fact that the anti-epileptic agent valproate is no enzyme inductor; it is an enzyme inhibitor.

NeuroNews: How would you evaluate the still new discipline of evidence-based medicine, particularly with regard to anti-epileptic pharmacotherapy for adults?

Prof. Stefan: In my opinion we need controlled studies focusing on evidenced-based therapy in order to gain objective data as to which anti-epileptic agent is effective for what type of seizure or epileptic syndrome, with reference to the patient's age and tolerance. However, in most cases such studies are initially conducted only to achieve authorization for a substance to be administered, for instance, in a placebo-controlled and randomized manner. In subsequent

studies, the patient's optimal individual treatment is determined. Here one should additionally consider hormonal changes of aged, and the attendant psychological circumstances. These scientific investigations are no longer concerned with established dosages of medications. Rather, they are focused on individual dose titration. Thus, a substance may be dosed too high at the beginning of a study and may cause unnecessary side effects. However, individual optimal dose titration is very important for the patient's daily life. Thus, on the one hand we need evidence-based medicine and, on the other hand, we need to perform studies tailored to the patient's daily life.

NeuroNews: Thank you very much for this interview, Professor Stefan.

Dr. Susanne Schweizer conducted the interview on 5th May 2006 in Strasbourg, on behalf of Neuro News.

Imprint

The Neurology-Portal NeuroNews

Editorship for special publications:
Dr. med. Susanne Schweizer

Publication in the Internet available:
www.neuronews.de/media/doc/Interview_eng_Stefan_8-06.pdf

Managing director: Beate Döring

Publishing house:
MedienCompany GmbH
Medizin-Medienverlag
Zeppelinstr. 71-73
D-81669 Munich/Germany
Phone: ++49 (0)89 – 45835-301
Fax: ++49 (0)89 – 45835-306
www.mediencompany.de
www.medizin-medienverlag.de
Email: info@mediencompany.de

ISSN 1619-7577 (Print)
ISSN 1619-7585 (Online)

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Munich / Germany

Printed in Germany