A PATIENT THAT CHANGED MY PRACTICE

An enigmatic e

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A careful history and neurological examination are the cornerstones of practical neurology, the basis for establishing the cause of the problem and so for providing treatment. Neurologists have the reputation of being experts in clinical diagnosis, indeed they are usually proud of this. It is therefore frustrating for senior neurologists to seriously fail in establishing a diagnosis, particularly when the patient is your own father who needs your help. This is the story of my father's enigmatic illness, which a few years ago challenged my diagnostic skills – and subsequently helped modify my practice.

My father, at that time was 88 years old, and lived in a house in central Sweden with a relative (a few years younger) because my mother had developed severe dementia and had moved to a nursing home some years earlier. He was on long-term medication with warfarin after repeated episodes of pulmonary embolism and deep venous thrombosis. He was also treated with l-dopa (100 mg three times daily) for mild Parkinson's disease, and with a small dose of phenytoin (100 mg bd) after a few partial complex seizures about 20 years earlier. He had been blind for about a year due to macular degeneration and glaucoma, and was helped by his relative in most activities of daily living and taking his medications. However, his mind was superb, he followed the news on radio and TV, and he could move around indoors without any help having memorised all the details in the house.

In late November that year, he became dizzy one morning, developed slurred speech, and an unsteady gait and required help in transfers from bed to dinner table and toilet. The onset was quite rapid, over about an hour. The symptoms progressed until the next day, when he was admitted to hospital. On examination he was somnolent, dysarthric, slightly ataxic in all four limbs, had mild horizontal nystagmus, was slightly parkinsonian, and had a probable left facial weakness. The rest of the neurological and general medical examination was normal, as were routine laboratory tests, ECG and a CT brain scan. An in-dwelling catheter was inserted but removed after a few days. His condition improved gradually over the next 1–2 days and after 5 days he was discharged home in his usual condition with a diagnosis of vertigo, cause unknown.

However, the next day he was again ataxic, dysarthric, unable to walk unassisted, with an onset of symptoms similar to the first occasion. He again went to hospital. The neurological findings were unchanged, but he was also disoriented, had more severe tremor in his arms, was slightly febrile (37.4 °C) and was in atrial fibrillation. He was treated with digoxin, and a urinary tract antibiotic, and after a few days he was afebrile and back in sinus rhythm. Because of increased parkinsonian symptoms, a low dose of bromocriptine was added. He again recovered and was discharged home after 6 days.

Surprisingly, the story repeated itself. Back home he become increasingly ataxic, confused, developed hallucinations, and was unable to walk unassisted. He remained in bed most of the time, and ate very little. He was reluctant to return to hospital for a third time within a few

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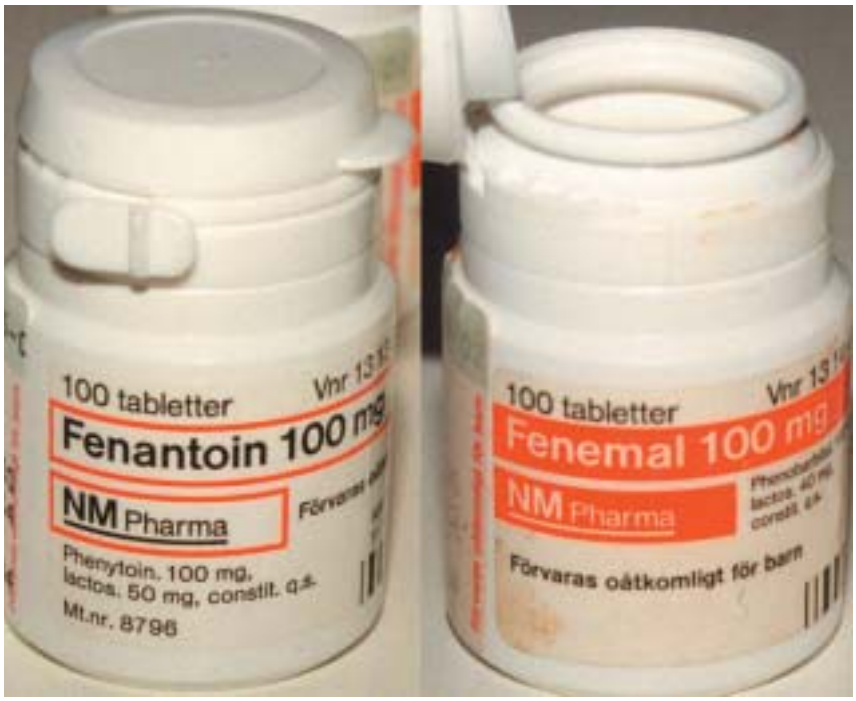
weeks, but after almost a week at home with the same, or even worse, symptoms he once more sought medical advice. He was very tired, confused, had mild hallucinations, and was unable to walk. Neurological examination was similar to previous admissions but this time a right facial weakness was felt to be present. Laboratory tests, a new CT scan of the brain, chest X-ray and ECG were all normal. Bromocriptine and digoxin were both stopped and thiamine started.

I was in repeated contact with the treating physicians, who thought my father first had had an episode of unspecified dizziness, followed by encephalopathy due to atrial fibrillation, iatrogenic urinary tract infection, and the complications of therapy with digoxin and subsequently bromocriptine. Though this chain of events was plausible, my medical radar sensed that there had to be some other underlying cause which we had failed to identify.

My father again recovered completely after about another week in hospital, but this time he was discharged to a nursing home. The cause of his recurrent illness remained a mystery until I visited my parents and stayed in their house a few months later. Searching for some aspirin for myself I went to the vast collection of old and more recent drugs (prescribed, or bought over-the-counter) that had accumulated over several decades. I was surprised to find a container of Fenemal (phenobarbital) 100 mg in the collection. As far as I knew nobody in the family had been prescribed this drug, and according to the label it had been delivered from the pharmacy only the previous November. Except for the name, the container was identical to that containing the Fenantion (phenytoin) tablets he was actually prescribed, as was the colour of the label, milligrams of each tablet, and even the tablet size and shape. The same pharmaceutical company made both drugs. I immediately realized that the two drugs must have been confused at the pharmacy, and that my father had started each day with a robust morning-dose of phenobarbital, and had taken a second dose at bed time, instead of his usual phenytoin. I was relieved to have discovered the cause of the enigmatic recurrent encephalopathy, and my father was happy that the cause was external, and not due to some brain disease, which he had feared. The mistake was notified to the National Board of Health and Welfare and my father received some financial compensation. Soon afterwards, the pharmaceutical company decided to change the appearance of the containers of the two drugs (which were kept in alphabetical order and in the same drawer next to each other at the pharmacy), but only after several more mistakes in muddling the two drugs had occurred.

COMMENT

Although in retrospect an external cause of the encephalopathy should have been considered, the correct diagnosis was still missed. Of course, it is difficult to spot an adverse effect of a drug which is not included on a patient's medication list. A toxicology screen would have been diagnostic but was not done. Also finding a zero level of phenytoin in the blood might have been



a clue, and presumably my father would have noticed the muddle if he had not been blind.

Although human errors are unlikely to be completely eliminated, this episode helped to increase my awareness of the safety of drug prescription and administration in the elderly, an issue that should be given considerable respect. Elderly patients with neurological diseases, particularly those that affect cognition, are likely to be at particularly high risk, and efforts to increase the safety of drug administration should be encouraged (Haynes *et al.* 2003). Treatments, once instituted, tend to be continued in elderly persons and the responsible physician, and consulting physicians, are often unaware of the entire pharmacological and medical history of every patient. A higher number of medications have been associated with inappropriate medication use (Aparasu & Mort 2000). According to a recent Swedish study, patients with epilepsy in nursing homes used on average eight drugs and those with Parkinson's disease used 8.6 (Midlöv *et al.* 2002). About 40% of both groups used drugs that were regarded as inappropriate for geriatric nursing home patients. Overall, approximately 30% of hospitalized patients experience adverse events attributable to drugs, and 3–28% of all hospital admissions are related to adverse drug events (Caranasos *et al.* 1974; Claessen *et al.* 1991). The length of stay and costs of hospitalization for adverse drug events are substantial (Claessen *et al.* 1997), and one study showed that the costs of drug-related morbidity and mortality in the United States were higher than the total cost of cardiovascular or diabetes care in that country (Johnson & Bootman 1995).

Drug-related events in clinical practice are probably both under-recognized and under-reported. More studies are needed to evaluate ways to increase the safety of drug administration in patients with neurological diseases, in particular among those with reduced autonomy.

Drug-related events in clinical practice are probably both under-recognized and under-reported

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