Migraine prophylactic medication usage patterns in The Netherlands

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Cephalalgia

Rahimtoola H, Buurma H, Tijssen CC, Leufkens HG & Egberts ACG. Migraine prophylactic medication usage patterns in The Netherlands. Cephalalgia 2003; 23:293–301. London. ISSN 0333-1024

This study aims to investigate usage patterns of specific migraine prophylactic medications in ergotamine and triptan patients commencing this treatment for the first time during 1 January 1992 until 31 December 1998. Usage patterns of specific migraine prophylactic drugs were evaluated for each patient by accessing data from a large prescription database and were characterized as continued, switch or stop use during the patient observation period. Several patient and medication-related factors were explored in order to identify a possible relationship with the specific usage pattern defined. Approximately 75% of the study population ($n = 729$) had terminated (stop or switch) prophylactic treatment after 1 year. Age < 40 years (relative risk (RR) 1.9; 95% confidence interval (CI) 1.2–3.2) and the concomitant use of non-steroidal anti-inflammatory drugs (RR 3.2; 95% CI 1.2–5.5) or specific abortive migraine drugs resulted in a faster onset of treatment modification (switch). Overall, migraine prophylactic treatment is used for a relatively short period, probably attributable to the common limitations associated with migraine prophylaxis, such as poor compliance and/or limited therapeutic efficacy. Patterns of use can be influenced by a variety of factors, including age, type of prescriber and certain co-medication. Patient interview studies are required to clarify these issues further. □*Abortive migraine drugs, migraine, prophylaxis, usage patterns*

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Introduction

Migraine is a common disabling condition that can significantly limit and impair the health-related quality of life of the migraineur (1). Despite recent advances in migraine abortive therapy, such as the availability of sumatriptan and the second generation triptans, approximately 20% of migraine patients are unable to achieve satisfactory results from specific or non-specific abortive migraine therapy (2–4). In these patients the initiation of prophylactic medication is therefore a therapeutic option. This approach is advised particularly for patients suffering from two migraine attacks or more per month or for those in whom migraine attacks are unbearable (5). Various clinical guidelines concerning the prescribing and use of migraine prophylactic medications have been established to attain beneficial therapeutic and clinical outcomes (6–8). However, the realization of these goals can be impaired by a variety of patient and medication-related factors such as poor patient compliance to the drug regimen, frequent use of abortive migraine drugs during treatment, intolerable side-effects of prophylactic medications and inappropriate choice of drug (8).

One study estimated that patients using migraine prophylaxis once daily demonstrated an overall compliance rate of only 66%, whilst patients using multiple regimens had demonstrated even significantly lower compliance rates (9). Another study reported that 63% of the study patients receiving migraine prophylaxis were using abortive migraine analgesics concomitantly which may reduce the efficacy of prophylactic treatment (10, 11). Finally, common clinical practice has shown that treatment has occasionally been prematurely discontinued by the patient or physician for no apparent clinical reason (8).

Even though a few studies (10, 12–14) have provided valuable information concerning the extent and preference of migraine prophylactic drug use in their study populations, detailed data concerning the duration of prophylactic treatment and patterns of use on an individual level are, as far as we are aware, lacking.

The purpose of this retrospective, 6-year follow-up study was to investigate various usage patterns of migraine prophylaxis, including duration of use, and consumption of abortive migraine analgesics during migraine prophylactic therapy.

Methods

Study setting

The study used prescription data from the PHARMO-RLS database covering the period 1985–1998. This database has been described in full elsewhere (15). In brief, the system was designed in 1985 to provide relevant demographic and prescription data on an individual level for five medium-sized cities in The Netherlands from 1985 to 1989. Since 1990 it has been further updated, covering a total of six cities ($n = 300\,000$), and from 1993 to 1998 eight cities ($n = 450\,000$). In view of a high patient–pharmacy registration commitment in The Netherlands in addition to sophisticated pharmacy software currently available, the prescription medication information for each patient is virtually complete.

Each registered person is identified with an anonymous unique patient identification code that allows for the observation of patient medication use in time. Retrievable information per prescribed medicine includes date of dispensing, drug, dosage regimen, quantity supplied, duration of use and type of prescriber. Patient information per prescribed medicine includes gender, and date of birth. The database does not provide information concerning the indications for use of the medicines, in this case the diagnosis of migraine vs. cluster or tension-type headaches, or the complete registration of non-prescription medicines (e.g. OTC use of non-steroidal anti-inflammatory drugs (NSAIDs) or paracetamol), as patients may also purchase these drugs from non-pharmacy outlets.

Study population

Patients suffering from migraine were identified by their use of specific abortive migraine analgesics, as the database does not provide diagnostic data. We were unable to identify migraineurs solely using OTC medication or NSAIDs to treat their migraine attacks due to the incomplete registration of OTC medication in the database and the broad analgesic indications of NSAIDs. For this study, all patients having commenced an abortive migraine analgesic, either ergotamine or a triptan (sumatriptan, naratriptan, rizatriptan and zolmitriptan), for the first time from 1 January 1992 to 31 December 1998, were included ($n = 7175$). Sumatriptan was approved for use in 1991 in The Netherlands, whereas the other triptans were registered during different periods after 1997. The tablet form of sumatriptan had included a patient fee until 1997; hereafter this dosage form became fully reimbursed. First time users were defined as patients with a drug-free interval of abortive migraine analgesic use of at least 2 years. The date of first prescription of one of these drugs was termed the 'start date analgesia'. From these patients the study population consisted of all patients having commenced migraine prophylactic treatment for the first time during the observation period after start date analgesia ($n = 874$). Prescriptions were retrieved using the WHO Anatomical Therapeutical and Classification system (ATC system) (16).

With reference to the clinical and therapeutic guidelines of the Dutch College of General Practitioners (NHG formulary) and the Dutch Association of Neurologists (17, 18), prophylactic medications were defined as: β-blockers (propranolol or metoprolol), serotonin antagonists (pizotifen or methysergide), calcium antagonists (flunarizine), clonidine or valproic acid. The corresponding date was termed 'index date prophylaxis'. Despite their use in migraine prevention in certain countries, amitriptyline and verapamil were not included in this study, as their use in headache prevention in The Netherlands is primarily seen in mixed tension-type headache and cluster headache, respectively (4, 7, 18).

Excluded from the original population were patients starting migraine prophylaxis who pos-

sessed an observation period (period between the first migraine prophylactic prescription and the last ever registered prescription prior to or on 31 December 1998) of <6months ($n = 145$).

Statistical analysis

Baseline characteristics of the remaining study population initiating migraine prophylaxis ($n = 729$) were examined and included gender, age at index date prophylaxis, type and usage pattern of abortive migraine medication, type of prophylaxis and prescriber at index date and concomitantly used medication. The latter included antidepressant drugs (excluding amitriptyline), benzodiazepines, cardiovascular drugs (β-blockers excluding propranolol and metoprolol, ACE inhibitors, calcium antagonists excluding verapamil and nitrates), oral contraceptives, NSAIDs and gastrointestinal drugs (H2 antagonists and proton pump inhibitors).

For each prophylactic prescription, the legend duration was calculated as the amount of prescribed drug divided by the prescribed daily dose. The total exposed period of each patient was calculated as the sum of the legend duration of concurrent prescriptions and analysed using Kaplan–Meier survival analysis. Patterns of use (continuation, switch and stop) of the first prophylactic medication were determined. Switch use was defined as the change to another prophylactic medication between the index date prophylaxis and not more than 30 days after the legend of the last prophylactic prescription. Stop use was defined as the presentation of the last prophylactic prescription 6 months or more prior to termination of the patient observation period. Several factors were explored in order to identify a possible association with the specific usage pattern defined (continue, switch, stop) using Cox regression analysis. These included gender, age, type and prescriber of the migraine prophylactic treatment, abortive migraine drug use during treatment, and co-medication use. The strength of these factors was expressed by hazard ratios (HR) with 95% confidence intervals (95% CI) which can be interpreted as relative risk (RR).

The impact of prophylactic treatment on the consumption of abortive migraine drug use was determined by measuring the change in the therapeutic intensity (TI) during migraine prophylactic treatment relative to before. The TI was calculated by dividing the absolute number of defined daily doses (DDDs) dispensed per prescription per patient by the number of days between the first and last prescription presented during an observation period of up to 2 years preceding the index date prophylaxis (before treatment) as well as during migraine prophylactic therapy. For this analysis patients were also required to have presented at least two prescriptions for an abortive migraine drug prior to the index date prophylaxis and possess a duration of prophylactic treatment of at least 30 days.

- One DDD sumatriptan corresponded to one 100 mg tablet or one 6-mg subcutaneous injection.
- One DDD naratriptan or zolmitriptan corresponded to one 2.5-mg tablet.
- One DDD rizatriptan corresponded to one 10-mg tablet.
- One DDD ergotamine corresponded to one 4-mg single preparation by any route or one 2-mg combination preparation by any route (16).

To express the impact of prophylaxis of abortive migraine drug consumption on an individual level relative to before initiation of this treatment, we calculated for all patients a 'therapeutic intensity fluctuation estimate' defined as: $(TI_{\text{during prophylaxis}} - TI_{\text{before prophylaxis}})/Ti_{\text{before prophylaxis}}$.

The magnitude of the impact of migraine prophylaxis was calculated overall as well as stratified for age, gender, type and usage pattern of migraine prophylaxis. This method of assessing the impact of medication on the frequency and severity of migraine attacks has been applied elsewhere (19).

Microsoft Access®, a relational database software package, was used for database management and internal quality and validation procedures. The statistical package SPSS for Windows was used for data analysis.

Results

After satisfying eligibility criteria, a total of 729 first-time users of ergotamine or a triptan had commenced migraine prophylactic treatment following the use of these drugs during the study period, 1992–1998. Corresponding baseline characteristics are provided in Table 1. Approximately 80% of the population were female and the mean age was 40 years (range 12–93 years). More than two-thirds (74%) of the population was a recipient of ergotamine and approximately a third (28%) had commenced prophylactic therapy after having presented only one abortive migraine drug prescription. β-blockers were by far the migraine prophylactic drugs of first choice for both general practitioners and neurologists. The preference was followed by pizotifen (16.2%), flunarizine (8.5%), clonidine (7.8%), valproic

Table 1 Baseline characteristics of the study population initiating migraine prophylactic treatment (n = 729)

Characteristic	*n*	(%)
Gender		
Female	589	(80.8)
Male	140	(19.2)
Age, years		
Mean (SD)	40.0	(12.4)
<25	94	(12.9)
25–44	387	(53.1)
45–64	223	(30.6)
>64	25	(3.4)
Type of migraine prophylactic drug		
β-blockers	445	(61.0)
Pizotifen	118	(16.2)
Methysergide	11	(1.5)
Flunarizine	62	(8.5)
Clonidine	57	(7.8)
Valproic acid	36	(4.9)
Prescriber		
General practitioner	570	(78.2)
Neurologist	154	(21.1)
Unknown	5	(0.7)
Prior migraine abortive drug use		
Ergotamine	537	(73.7)
Sumatriptan	183	(25.1)
Naratriptan	4	(0.5)
Rizatriptan	3	(0.4)
Zolmitriptan	2	(0.3)
Single use*	207	(28.4)
Multiple use	522	(71.6)
Co-medication use		
Antidepressants	68	(9.3)
Benzodiazepines	200	(27.4)
–Use of both	41	(5.6)
Cardiovascular	34	(4.7)
Oral contraceptives	288	(39.5)
Gastrointestinal	88	(12.1)
NSAIDs	326	(44.7)
Mean (SD) observation (years)	3.0	(1.6)

*Corresponds to the single presentation of one abortive migraine drug prescription during observation period.

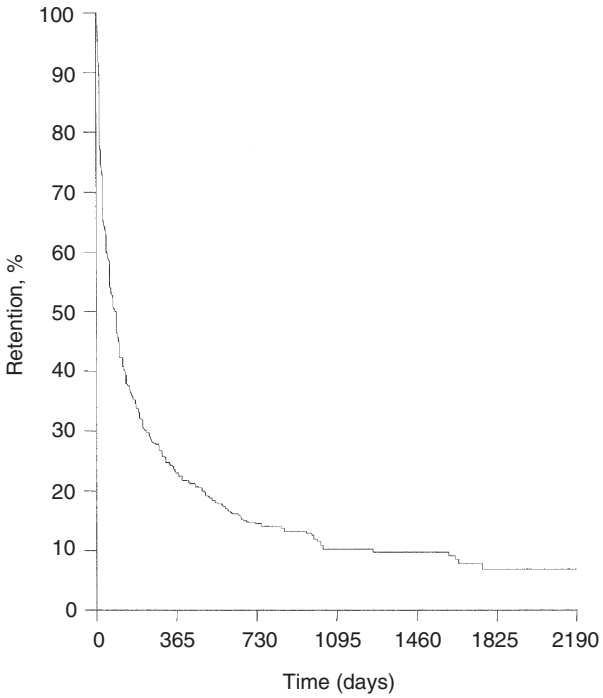

Figure 1 Kaplan–Meier survival curve: duration of the first migraine prophylactic treatment.

acid (4.9%), and methysergide (1.5%). The concomitant use of benzodiazepines (27%), oral contraceptives (40%) or NSAIDs (45%) by the patients was relatively high.

The median duration of migraine prophylaxis was 2.8 months (range 1 day to 6 years) (Fig. 1). One year following the initiation of prophylaxis approximately three-quarters of the study population had discontinued therapy (stop or switch). A minority, 15%, had demonstrated prolonged exposure of over 2 years.

Usage patterns of migraine prophylactic treatment stratified according to the various factors analysed are shown in Table 2. Males were as likely to continue treatment as females. Overall, patients aged ≥ 40 years had continued treatment longer than younger patients ($P < 0.01$), and were far less likely to have switched treatment from the original drug (RR 0.52; 95% CI 0.31–0.86). Patients treated by a neurologist (RR 0.70; 95% CI 0.58–0.86) and those patients having continued the use of ergotamine or triptans (RR 0.61; 95% CI 0.51–0.71) during migraine prophylaxis were far less likely to have discontinued treatment at an early phase. The latter group, however, demonstrated an increased tendency to undergo a switch in treatment (RR 1.79; 95% CI 1.06–3.03). The use of oral contraceptives or NSAIDs led to a more rapid onset in discontinuation of treatment, in particular switch treatment (oral contraceptives RR 2.22; 95% CI 1.26–3.91; NSAIDs RR 3.24; 95% CI 1.20–5.47).

The type of usage pattern displayed was likewise dependent on the type of migraine prophylactic drug used (Fig. 2). Overall, patients undergoing treatment with flunarizine or methysergide were inclined to have discontinued therapy (either stop or switch) more rapidly compared with β-blockers (RR 1.51; 95% CI 1.13–2.0 and RR 2.02; 95% CI 1.11–3.71,

Table 2 Characteristics and determinants of usage patterns of patients commencing migraine prophylactic treatment

Covariate	Average duration (months)	Discontinuation patterns		
		Overall ($n = 611$) RR* (95% CI)	Stop ($n = 545$) RR* (95% CI)	Switch ($n = 66$) RR* (95% CI)
Gender				
Female	7.6	1.00 [reference]	1.00 [reference]	1.00 [reference]
Male	6.7	1.11 (0.90–1.37)	1.07 (0.87–1.33)	1.46 (0.78–2.75)
Age				
<40 years	5.8	1.00 [reference]	1.00 [reference]	1.00 [reference]
≥40 years	9.0	0.73 (0.62–0.89)	0.75 (0.63–0.89)	0.52 (0.31–0.86)
Prescriber				
General practitioner	6.8	1.00 [reference]	1.00 [reference]	1.00 [reference]
Neurologist	9.7	0.70 (0.58–0.86)	0.72 (0.58–0.89)	0.69 (0.40–1.21)
Migraine analgesia				
Discontinued use during	5.5	1.00 [reference]	1.00 [reference]	1.00 [reference]
Continued use during	10.9	0.61 (0.51–0.71)	0.54 (0.44–0.65)	1.79 (1.06–3.03)
Co-medication use				
Antidepressant	9.5	1.06 (0.80–1.40)	1.02 (0.76–1.39)	1.54 (0.75–3.20)
Benzodiazepine	8.8	1.07 (0.90–1.29)	1.00 (0.83–1.21)	1.34 (0.79–2.30)
–Use of both	9.0	1.06 (0.74–1.50)	1.00 (0.69–1.46)	1.14 (0.42–3.09)
Cardiovascular	5.9	1.29 (0.89–1.86)	1.13 (0.76–1.69)	2.08 (0.82–5.27)
Oral contraceptives	7.6	1.16 (0.96–1.39)	1.22 (1.01–1.48)	2.22 (1.26–3.91)
Gastrointestinal	8.0	1.18 (0.92–1.50)	1.10 (0.85–1.42)	1.56 (0.75–3.27)
NSAIDs	7.8	1.26 (1.08–1.49)	1.26 (1.06–1.50)	3.24 (1.21–5.47)

*Relative risk (RR) vs. continued use: adjusted for age, gender, start age analgesia, and type of prescriber.

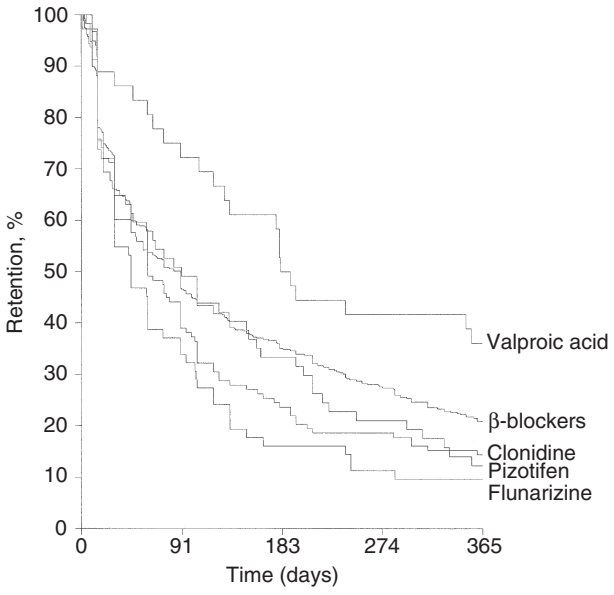

Figure 2 Kaplan–Meier survival curve: probability of continuing the first migraine prophylactic medication.

respectively). In contrast, patients using valproic acid were far more likely to have continued treatment during a longer period: approximately 50% were still continuing valproic acid treatment after 1 year of observation compared with 20% of the rest of the population (RR 0.61; 95% CI 0.38–0.89).

For analysis of the therapeutic intensity of abortive migraine drug use, 268 (35%) patients were eligible. Overall, on an individual patient level, the mean change in therapeutic intensity during vs. before migraine prophylaxis, expressed as the 'therapeutic intensity fluctuation estimate', decreased by 28%. Except for patients who had undergone a switch in treatment from the original migraine prophylactic medication, adjusted univariate analysis did not reveal any significant differences in the therapeutic intensity fluctuation estimate between the individual characteristics even though large differences within each category were observed. Females (39%), patients younger than 40 years (46%) and the continued use of migraine prophylactic therapy (49%) were associated with a relatively large reduction as well as the use of valproic acid (46%).

Table 3 Therapeutic intensity fluctuation of abortive migraine drug use during vs. before migraine prophylactic medication use (n = 268)*

Characteristic	*n*	TIF estimate, %	(95% CI)
Overall	268	–28.3	(–47.6 to –0.09)
Gender			
Female	216	–38.7	(–54.4 to –23.0)
Male	52	+14.4	(–60.9 to +89.9)
Age			
<40 years	118	–45.9	(–66.4 to –25.5)
≥40 years	150	–14.6	(–44.9 to +15.7)
Abortive medication use			
Continued	161	+19.2	(–10.6 to +49.1)
Prophylactic usage pattern			
Continued	67	–47.8	(–69.0 to –26.5)
Stop	171	–32.3	(–58.5 to –0.06)
Switch	30	+37.1	(–32.1 to +106.4)†
Type of prophylactic drug			
β-blockers	164	–26.5	(–52.8 to –0.002)
Serotonin antagonists	45	–30.9	(–78.2 to +16.3)
Funarizine	18	–37.9.	(–27.4 to +51.6)
Clonidine	25	–17.6	(–66.9 to +31.7)
Valproic acid	16	–46.2	(–81.2 to +11.2)

*Inclusion criteria for analysis applied.
†P = 0.03 vs. continued use.

Discussion

Our study demonstrated that patients commencing migraine prophylactic treatment for the first time had used these drugs for a relatively short period of time. More than half of the study population had discontinued migraine prophylaxis within 3 months after commencing this form of treatment, for which relevant contributing factors were young age (<40 years), treatment within the primary care setting, and concomitant use of NSAIDs. Approximately 15% had continued treatment for more than 2 years. Continued use of abortive migraine drugs during prophylaxis was associated with an increased likelihood of switching to another prophylactic drug during the original therapy. This was also seen in patients of young age and patients concomitantly using NSAIDs. Despite the relatively limited duration of prophylactic treatment observed, the impact of this therapy on the consumption of abortive migraine drug use was strikingly high: about two-thirds of the patients eligible for analysis had experienced a reduction of ≥50% in abortive migraine drug consumption, as expressed by the therapeutic intensity fluctuation estimate.

According to therapeutic guidelines, an appropriate trial of migraine prophylaxis treatment to achieve therapeutic efficacy is a minimum of 3 months (5, 7). Frequent limitations to the use of migraine prophylactic medications, such as delayed onset or absence of therapeutic efficacy, early occurrence of adverse effects, and poor patient compliance to the drug regimen (8, 9) may therefore offer some explanation concerning the high proportion of patients having prematurely discontinued therapy. Lipton et al. in their study determining the preferences and expectations of migraineurs concerning treatment, had shown that a failure to comply to therapy can be partially related to a failure of the practitioner to understand the patient, which may lead to dissatisfaction with treatment and eventually a gradual lack of medical consultation by the patient (20, 21).

More than two-thirds of our study population who had discontinued prophylactic treatment during the patient observation period had likewise temporarily discontinued the use of specific abortive migraine drugs. These findings may suggest that treatment may have been successful for some patients, whereby the subjective need to continue the use of both therapies and regularly consult the physician was weakened (12, 20).

In contrast, patients having continued ergotamine or triptans during prophylaxis were more likely to have continued or switched migraine prophylactic treatment from the original migraine prophylactic drug. It is therefore highly likely that these patients were suffering from more severe forms of migraine. It must not be ruled out that the higher rate of switching in some of these patients combined with the observed increase in the consumption of specific abortive migraine analgesia during prophylaxis may have been an indication of a reduced effectiveness of the original prophylactic drug due to possible concomitant overuse of these specific drugs (5). This complication can be further highlighted by the finding that the simultaneous use of NSAIDs was also associated with an increased tendency to switch treatment. Chronic use of NSAIDs can lead to medication rebound headache and undermine the therapeutic outcomes of migraine prophylaxis (11, 22).

Due to gender-induced differences in migraine severity, females are more likely than males to seek medical advice regularly for migraine and other headache symptoms, which has been shown to lead to an increased and prolonged prescription medication use for migraine in this population (23, 24). However, we could not identify a strong correlation between retention of prophylactic use and gender type.

Krobot et al. estimated that approximately 75% of young migraineurs irregularly consult their doctor (21). The strong association between young age and short trial of migraine prophylactic treatment observed in this study may reflect this and other similar findings (24, 25).

As observed in other studies, the majority of our patients obtained medical treatment from their general practitioner (21, 23, 24). Of interest, patients having undergone neurological consultation were more inclined to have continued prophylactic treatment. This may be related to the nature of the headache, in which patients suffering from severe forms of migraine will more likely be referred to a specialist by the general practitioner. This in turn has been shown to exert a positive impact on migraine therapeutic outcomes, regardless of the type of medication offered by the physician (26, 27).

Various studies have confirmed a strong association of anxiety and depression with severe migraine (28, 29). Treatment of these conditions in migraine sufferers has also been associated with the initiation of migraine prophylactic therapy (14). It was our *a priori* expectation that the combined use of antidepressants and/or benzodiazepines would also influence the manner in which migraine prophylactic treatment was used, since psychiatric co-morbidity has also been linked to chronic use of abortive and symptomatic medications in migraine (30). However, we found no remarkable associations.

All drugs analysed had resulted in a reduction in the therapeutic intensity of abortive migraine drugs. Although significant differences were not observed, the largest reduction was estimated for valproic acid, followed by pizotifen, flunarizine, β-blockers and clonidine. The usage patterns observed for the individual prophylactic drugs highlighted a few interesting issues. In the case of methysergide, the recommendation to discontinue treatment after 6 months in view of the potential occurrence of severe side-effects, such as retroperitoneal fibrosis, may explain the rapid onset of treatment discontinuation (either stop or switch) observed in this study. The increased tendency to discontinue treatment with flunarizine compared with β-blockers may be explained by its side-effect profile, in particular weight gain and sedation (5–8). The stronger rate of retention seen for valproic acid may be an indication of its distinct documented effectiveness in migraine prevention, despite side-effects and required monitoring parameters. For this reason, the drug is considered a drug of choice by neurologists for migraine prevention (18, 31).

There are several limitations to this study. First, the therapeutic indications of many of the drugs analysed are not exclusive to migraine prevention, but also extend to the treatment of cardiovascular complications, epilepsy and other vascular headaches (i.e. misclassification). Second, since access to clinical information and use of OTC medication information was limited, we were required to identify patients suffering from migraine by their use of specific migraine analgesics, such as ergotamine or the triptans. This can likewise lead to an underestimation of the migraine population residing in the study catchment, since only a minority of migraineurs have been found to use ergotamine or sumatriptan to treat their headache attacks (32). For these reasons, our results can only be representative of patients using ergotamine or a triptan in whom the severity of migraine is most probably higher compared with migraineurs solely using OTC or non-specific migraine analgesics.

Due to the lack of clinical information, our explanations concerning the relatively short trial of migraine prophylactic treatment observed may at times be speculative. However, in light of the various documented problems and limitations concerning migraine management and treatment, we believe that these may be applied to our findings and *vice versa*. Finally, the investigated population is non-homogeneous, meaning that a proportion of the patients may have suffered from tension-type mixed with migraine or cluster headaches.

Some imprecision in our analysis of the different usage patterns of migraine prophylaxis and estimation of therapeutic intensity as an indication of the frequency of migraine attacks may exist, as an assumption was made that a prescription presented at the pharmacy correlates with consumption of the drug. However, estimation of drug consumption need not be a problem for recipients of multiple prescriptions, since prescriptions repeated consistently can serve as strong evidence of drug use by patients (33). Our analysis of therapeutic intensity, for example, included only those patients who presented multiple prescriptions of ergotamine or triptans prior to prophylactic treatment. Furthermore, this particular analysis could be performed only on a minority of the total population, mainly due to the strict eligibility criteria applied ($n = 268$). However, we observed no distinct differences in patient or medication characteristics between analysed and non-analysed patients.

A clear preference to prescribe ergotamine above sumatriptan or other triptans as the first specific abortive migraine drug was observed and is probably attributable to the reimbursement policies con-

cerning sumatriptan tablets during the study period. In fact, the prescribing of ergotamine as a specific abortive migraine drug of first choice in The Netherlands is slowly decreasing (34). If we had possessed sufficient data, say up to 2002, this pattern would most likely have been highlighted. However, we feel that our results will not have been substantially different if a more equal preference was observed.

Despite some limitations to this study, we have shown that migraine prophylactic treatment is used for a short period of time in the majority of patients. A small number of patients had exhibited prolonged use of treatment. These patients also require reassessment as to the necessity of continued exposure. Various factors were identified, such as age, type and prescriber of prophylaxis and comedication use, that had influenced the manner in which migraine prophylactic drugs are used in common clinical practice. It is hoped our findings add to the existing realization that greater appreciation and awareness of more regular and stringent therapeutic monitoring of the migraine patient are required. A patient interview study concerning the use of specific abortive migraine medications and prophylactic treatment may clarify certain issues concerning effectiveness of and satisfaction with treatment.

Acknowledgements

This study is funded by a grant from The Royal Dutch Association for the Advancement of Pharmaceutical Sciences (KNMP), The Hague, The Netherlands and SIR Institute for Pharmacy Practice Research, Leiden, The Netherlands.

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