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Clinical and Therapeutic Aspects of Migraine in Brazzaville

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Abstract

Introduction: Migraine is the most common primary headache, and can cause significant disability. There are two types, migraine without aura and migraine with aura. The diagnosis of migraine is essentially clinical. Worldwide prevalence was estimated at 11.6% in 2009. In Africa, it is estimated at 10.4%. **Objective:** To describe the clinical and therapeutic aspects of migraine in Brazzaville. **Patients and Methods:** This was a door-to-door cross-sectional study conducted from 1st May to 1st July 2018 in the city of Brazzaville. Subjects over 18 with clearly expressed consent were included. The questionnaire covered demographic characteristics, diagnostic criteria for migraine according to the IHS, treatments taken. The degree of disability was determined using the Migraine Disability Assessment Scale (MIDAS). Statistical analysis was performed using SPSS 22.0 for MAC. **Results:** Of the 1017 subjects interviewed in this study, 115 (39.9%) had migraine, including 73 women (63.47%) and 42 men (36.52%). In the group of migraine sufferers, the number of cases of definite migraine was 61 (53.04%) and that of probable migraine 54 (46.95%). For 81 migraine sufferers (70.43%), stress was the triggering factor. The frequency of attacks was weekly and monthly for 30 (26.1%) and 19 (16.5%) sufferers respectively. The location of the migraine was unilateral in 38% of cases and tilted in 24.3%. The intensity of the attack was described as moderate and severe in 41.7% and 57.4% of subjects respectively. Phonophobia/photophobia accompanied the migraine in 65.2% of cases. One hundred and eight subjects were treated. Of these, 106 (98.1%) were on medication. Eleven (10.37%) had received a medical prescription, and ninety-seven (89.8%) were self-medicating. Five and three subjects were under the care of a general practitioner and a neurologist respectively. **Conclusion:** Migraine is a fre-

quent pathology in Brazzaville. Its preponderance among young people and women calls for the implementation of effective prevention strategies for these already vulnerable social groups. The form without aura was the most common type. Visual aura was the most common type. Headache-related symptoms were dominated by phonophotophobia, followed by nausea and vomiting. Almost all migraine sufferers were self-medicating, and very few were under the care of a doctor. First-line analgesics and NSAIDs were the mainstay of treatment.

Keywords

1. Introduction

Migraine is the most common primary headache [1], causing significant disability. It is characterized by paroxysmal headache attacks, sometimes associated with nausea, vomiting, phonophobia or photophobia [2]. There are two types of migraine: migraine without aura and migraine with aura, with aura referring to the transient neurological manifestations that precede the migraine attack [3]. Diagnosis is essentially clinical, according to criteria laid down by the International Headache Association (IHS) [1] [4].

It is a major public health problem, with a global prevalence estimated at 11.6% in 2009 [5], and an African prevalence of 10.4% [6]. In the *Global Burden of Disease Survey*, published in 2010, migraine was ranked as the third most common disorder and the seventh leading cause of disability worldwide [7]. In 2015, it was ranked as the third leading cause of disability in people under 50 [8]. This ranking is obviously linked not only to its high prevalence, but also to its considerable socio-economic impact [9]. The World Health Organization (WHO) also ranks it among the twenty most disabling conditions [10]. In the Republic of Congo, although migraine is a frequent reason for neurology consultations, with a prevalence of 11.3% in Brazzaville, there is as yet little data in the literature on the epidemiological, clinical and therapeutic profiles of migraine sufferers [11] [12].

As migraine pathology is under-documented in our context, and does not allow practitioners to have any hindsight on the quality of the follow-up and management of the subjects concerned, we proposed, through this work, to contribute to the state of the art and to the improvement of the management of this condition in the Republic of Congo.

2. Patients and Methods

We conducted a door-to-door cross-sectional study from May 1st to July 1st 2018 in the city of Brazzaville.

Brazzaville is the political and administrative capital of the Congo. It is located

on the right bank of the Congo River, and extends over 30 kilometers. It covers an area of around 11,500 hectares [13]. The city of Brazzaville is bounded to the north by the sub-prefecture of Igné, to the south by the sub-prefecture of Goma Tsé-Tsé, to the east by the Congo River, and to the west by the sub-prefecture of Mayama.

The city of Brazzaville comprises nine (9) arrondissements, subdivided into neighborhoods, zones and blocks. There are 87 districts, 434 zones and 3509 blocks [14]. In 2017, the population of Brazzaville was estimated at 1.838.348 [15].

The work concerned all the inhabitants of the city of Brazzaville. A door-to-door survey was carried out, targeting headache sufferers. All subjects over 18 years of age who had clearly expressed their consent were included. Subjects with considerable cognitive or physical deficits that prevented them from answering the questionnaire, as well as those who refused to answer the questionnaire or answered only partially, were not taken into account.

Cluster random sampling was used to determine the sample size representative of the study population. Based on the Schwartz formula described below, the sample size was estimated at 864 subjects.

Schwartz formula

$$N = Z^2 PQ / I^2$$

with:

N: sample size.

Z: confidence level according to normal distribution (Z = 1.96 for a 95% confidence level).

P: the proportion of migraine sufferers in the general population in Africa (P = 10%).

$Q = 1 - P$ and I: the 2% margin of error.

To determine the sample size (Y) in each Brazzaville arrondissement, the population of each arrondissement was weighted according to the percentage (X) of the population of each arrondissement in relation to the population of the city of Brazzaville. $X = P$ arrondissement $\times$ 100/P Brazzaville

$Y = X \times P$ estimated/100 (P estimated = 864).

The survey was based on a questionnaire designed by us. The form explored socio-demographic characteristics, IHS diagnostic criteria for migraine, treatments taken during attacks and medical follow-up. The degree of disability due to migraine was determined using the MIDAS (Migraine Disability Assessment Scale) questionnaire [16] [17].

The survey was carried out by students at the end of their training in general medicine. The interviewers went door-to-door in all the districts of Brazzaville to fill in the questionnaire.

For each subject interviewed, questioning about headaches began with the question: "Do you often suffer from headaches?" if yes, the interview continued with the diagnostic criteria for migraine, if no, the interview ended.

The HIT-6 scale and MIDAS score were completed for all chronic headache

sufferers.

Confirmatory diagnosis of migraine cases was made by two neurologists in accordance with ICHD 3 criteria.

Statistical analysis was performed using SPSS 22.0 for MAC. Numbers were compared using Pearson's Chi-2 test, and means were compared using Student's t-test.

3. Results

Of the 1017 subjects interviewed in this study, 115 (39.9%) had migraine, including 73 women (63.47%) and 42 men (36.52%). The sex ratio was 0.57.

In the group of migraine sufferers, the number of cases of definite migraine was 61 (53%) and that of probable migraine 54 (47%).

The mean age at onset of migraine was 26.1 ± 10.3 years for all migraine sufferers. The median duration of the disease was 6.1 years, with an interquartile range of 3.3 to 10.9 years.

Subjects with definite migraine had a mean age at onset of 24.8 ± 9.8 years. This compares with 27.7 ± 10.8 years for probable migraine sufferers. The median values for length of illness were 7.6 and 5.3 years, respectively for definite and probable migraine sufferers.

Seventy (60.9%) of the migraine sufferers had a relative suffering from headaches.

For 81 migraine sufferers (70.43%), stress was the trigger for the migraine attack (Figure 1). The frequency of attacks was weekly and monthly in 30 (26.1%) and 19 (16.5%) cases respectively. The location of the migraine was unilateral in 38% of cases and tilted in 24.3%. The intensity of the attack was described as moderate and severe in 41.7% and 57.4% of subjects respectively. Phonophobia/photophobia accompanied the migraine in 65.2% of cases (Table 1).
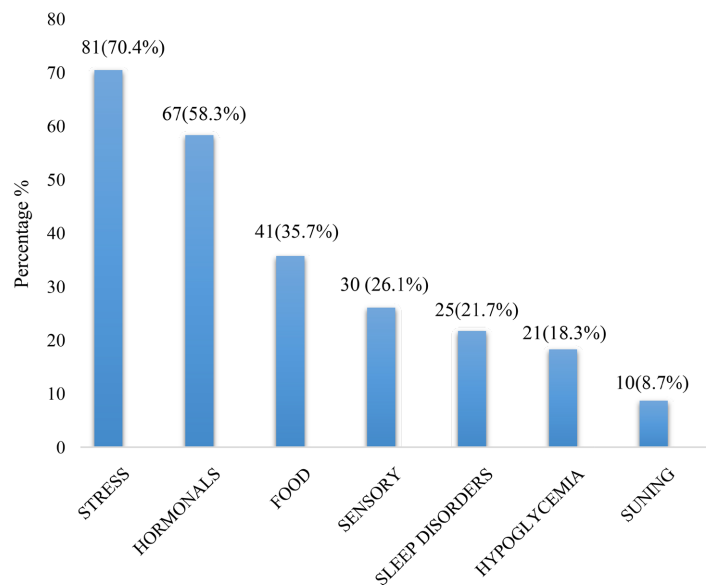

Figure 1. Migraine triggers.

Table 1. Clinical features.

CHARACTERISTICS	n	%
HEADQUARTERS		
Unilateral	44	38.3
Rocking	28	24.3
Others	53	46.1
Type		
Pulsatile	87	75.7
Burning	10	08.7
In the vice	20	17.4
Weightlessness	24	20.9
Crushing	02	01.7
Electrical discharge	03	02.6
Stab wound	03	02.6
Intensity		
Lightweight	01	00.9
Moderate	48	41.7
Severe	66	57.4
Evolutionary mode		
Criticism	101	87.8
Continuous	014	12.2
Duration and frequency of seizures		
Duration (4 - 72 h)	100	87.0
Frequency of crises		
Not specified	-	-
Daily newspaper	04	03.5
Weekly	30	26.1
Monthly	19	16.5
Irregular	62	53.9
Aggravating factors	74	64.3
Nausea	29	25.2
Vomiting	05	04.3
Phonophotophobia	75	65.2

49 of the migraine sufferers (42.6%) had an aura. Of these, 38 (77.55%) had ophthalmic aura and 8 (16.33%) had multiple aura (Figure 2).

The clinical characteristics of patients according to certain and probable migraine types are presented in Table 2. The clinical characteristics of patients according to the presence of aura are presented in Table 3.

Table 2. Clinical characteristics by migraine type.

FEATURES	DEFINITE MIGRAINE (n = 61)		PROBABLE MIGRAINE (n = 54)		*p*
	n	%	n	%	
Headquarters					
Lateral	20	32.8	24	44.4	0.199
Rocker	21	34.4	07	13.0	0.007
Other	26	42.6	27	50.0	0.428
Type					
Pulsatile	46	75.4	41	75.9	0.949
Burn	04	06.6	06	11.1	0.387
In the vice	15	24.6	05	09.3	0.030
Gravity	12	19.7	12	22.2	0.737
Shredding	01	01.6	01	01.9	0.931
Electrical discharge	-	-	03	05.6	0.062
Stabbing	01	01.6	02	03.7	0.488
Intensity					0.156
Slight	-	-	01	01.9	
Moderate	22	36.1	26	48.1	
Severe	39	63.9	27	50.0	
Scalable mode					0.050
Review	57	93.4	44	81.5	
Continuous	04	06.6	10	18.5	
Seizure duration	60	98.4	40	74.1	<0.001
Seizure frequency					0.208
Daily	04	6.6	-	-	
Weekly	17	27.9	13	24.1	
Monthly	11	18.0	08	14.8	
Irregular	29	47.5	33	61.1	
Aggravating factors	43	70.5	31	57.4	0.144
Nausea	25	41.0	04	07.4	<0.001
Vomiting	04	06.6	01	01.9	0.217
Phonophotophobia	49	80.3	26	48.1	<0.001

Table 3. Clinical features according to presence of aura.

Features	Migraine With Aura (n = 49)		Migraine Without Aura (n = 66)		*p*
	n	%	n	%	
Definite migraine	32	65.3	29	43.9	0.023
Migraine probable	17	34.7	37	56.1	

Continued

| Headquarters					
Unilateral	19	38.8	25	37.9	0.922
Rocker	13	26.5	15	22.7	0.638
Other	19	38.8	34	51.5	0.175
Type					
Pulsatile	34	69.4	53	80.3	0.177
Burn	02	04.1	08	12.1	0.185
In the vice	13	26.5	07	10.6	0.026
Gravity	12	24.5	12	18.2	0.410
Shredding	01	02.0	01	01.5	1.000
Electrical discharge	02	04.1	01	01.5	0.574
Stabbing	02	04.1	01	01.5	0.574
Intensity					1.000
Slight	-	-	01	01.5	
Moderate	21	42.9	27	40.9	
Severe	28	57.1	38	57.6	
Scalable mode					0.578
Review	44	89.8	44	89.8	
Continuous	05	10.2	05	10.2	
Seizure duration	44	89.8	56	84.8	0.436
Seizure frequency					0.141
Daily	02	04.1	02	03.0	
Weekly	18	36.7	12	18.2	
Monthly	07	14.3	12	18.2	
Irregular	22	44.9	40	60.6	
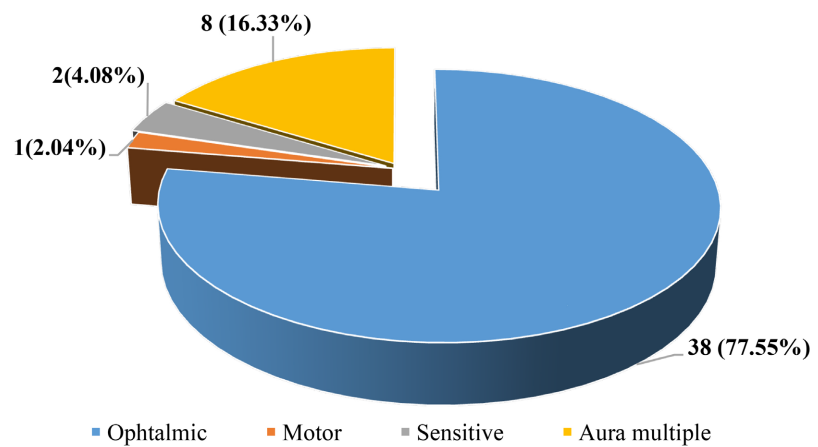
Figure 2. Aura type (a multiple aura corresponds to the association of two or more aura types).

The MIDAS score values for characterizing seizure-related disability are shown in Table 4.

One hundred and eight subjects were receiving treatment. Of these, 106 (98.1%) were taking medication. Eleven (10.2%) had received a medical prescription, and ninety-seven (89.8%) were self-medicating. Five and three subjects were under the care of a general practitioner and a neurologist respectively. The different groups of drugs used in seizure management are shown in Table 5.

4. Discussion

On the basis of the ICHD-3 criteria, 115 of the 1017 people surveyed were diagnosed as suffering from migraine. The majority were women (63.5% women, 36.5% men). The female predominance of migraine has been extensively described in the literature [3] [6] [18] [19] [20]. It may be explained by hormonal variations during the menstrual cycle and pregnancy, and by a genetic predisposition [21].

Table 4. Distribution of all migraine sufferers by MIDAS.

MIDAS grades	Employees (n)	Percentages (%)
I	44	30.26
II	36	31.31
III	21	18.26
IV	14	12.17
MIDAS grouping		
Grades 1 and 2	80	69.56
Grades 3 and 4	35	30.44

Table 5. Management.

TERMS AND CONDITIONS	n	%
Type of treatment (N = 108)		
Medicinal products	106	98.1
Non-drugs	002	01.9
Drugs used (N = 108)		
Analgesics	71	65.7
NSAIDS	67	62.0
Triptans	01	00.9
Antiepileptics	01	00.9
Antidepressants	03	02.8
Others	15	13.9

The mean age at disease onset was 26.1 ± 10.3 years. This result is in line with the literature. Indeed, subjects in their twenties and thirties are the most affected, with peak frequency between the ages of 30 and 39 [22] [23].

Stress was the most frequent trigger (81%), followed by hormonal factors (67%). The predominance of psychological triggers, including stress, is mentioned in several studies. In a study in Senegal, psychological factors were incriminated in 76% of subjects. Climatic and hormonal factors followed in 63% and 21% of cases respectively [24]. Similarly, in France, a study associated the onset of migraines with fear, anxiety and anger in 55.6%, 57.9% and 55.3% of people respectively. Hormonal factors affected 29.9% of women [25].

The relationship between a family history of migraine and its onset has been proven in numerous studies. McGregor, for example, states that the risk of a migraine sufferer having a parent with migraine is 40%. If both parents are affected, the risk is 75% [26]. Another author estimates that this risk is multiplied by 1.9 for migraine without aura and by 4 for migraine with aura [27]. In line with these observations, 60.9% of the migraine sufferers we interviewed had a first-degree relative with migraine.

Classically, migraine without aura is more frequent than migraine with aura [3] [16] [23]. The same observation was made in our study. There were 57.4% cases of migraine without aura and 42.6% with aura. In the 49 subjects who had migraine with aura, ophthalmic aura was the predominant type (40% of all migraineurs and). These results are superimposed on those of Streel *et al.* in Belgium, who reported a preeminence of visual manifestations of migraine aura, with an estimated frequency of 40.8% in their series [28]. Among the symptoms accompanying the attack, the most frequent were phonophotophobia and vomiting, respectively 62.5% and 04.3% of cases. In a study carried out in PIKINE, Senegal, photophobia and phonophobia were the most frequent accompanying signs, in 58% and 70% of cases respectively [24]. Similar results have been reported in other studies [25] [29] [30].

Disability due to the disease, as assessed by the MIDAS score, also reflects the severity of the attacks. In the population of migraine sufferers we surveyed, 35% were classified as MIDAS grade III to IV and 80% as grade I to II. These results are close to those reported in an international survey, the Global Migraine and Zolmitriptan Evaluation (MAZE). According to this study, the percentages of grade III and IV migraine sufferers were 47% in England and 48% in Germany [31].

One hundred and six of the 115 migraine sufferers were taking medication to treat their condition. Of these, only 8 (6.9% of migraine sufferers) had received a medical prescription, three of whom were under the care of a neurologist. The common practice of self-medication among migraine sufferers has been reported in several studies [7] [32] [33].

In the Congo, this practice is said to be partly facilitated by the widespread availability of street medicines. What's more, according to a French study, the fact that patients consider migraine not to be a serious illness justifies the ab-

sence of recourse to a doctor [25]. The most commonly used medications were first-line analgesics (65.7%) and anti-inflammatories (62.03%). The use of triptans was very low, with only one case reported. A similar finding was made in an international study, which reported 3% to 19% of migraine sufferers followed up by a doctor who had a triptan-based treatment [31]. It should be noted that none of the migraine sufferers in our study was taking an ergot derivative.

Optimal monitoring of migraine medication requires the use of a migraine diary. Among other things, this tool can be used to record the total number of doses of medication taken per month, in order to identify non-compliance or overuse that could lead to chronic headaches [3]. It also helps to assess treatment efficacy. In our study, only two patients used a migraine diary. These patients were under the care of a neurologist. The low number of neurologists in Brazzaville, which has an estimated population of 1,838,348 inhabitants and a staff of 5 neurologists, 3 of whom share a public-private practice, may explain this.

5. Conclusions

This study, carried out in the general population, shows that migraine is a frequent pathology in Brazzaville, affecting mainly women at an early age, and mostly without any warning aura.

Self-medication and lack of medical follow-up were the rule. First-line analgesics and NSAIDs were the mainstay of treatment, often purchased on the street. These facts underline the need to set up mass information programs on migraine pathology and the importance of medical follow-up, in order to contribute to efficient management.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix 1

SURVEY FORM

Telephone number:

Survey date: /....../....../ /......./......../ /......../......./......./ Survey location: ....

Inclusion number: ....

- **SOCIO-DEMOGRAPHIC IDENTIFICATION:**

1) Age in years:

2) Sex: F M ☐

3) Profession: ☐

(1-Public servant) (2-Private sector employee) (3-Informal activities) (4-Pupil/student) (5-No job) (6-Retired)

4) Working hours per day:

5) Overtime:

6) Level of education:

1 (1-Primary) (**2-Secondary**) (**3-Higher**) (**4-No** schooling)

7) Marital status:

(1-Married) (2-Single) (3-Couple) (4-Widowed) (5-Divorced)

8) Number of spouses:

9) Number of children:

10) Residence: Are you an owner ☐ or a tenant? ☐

11) Socio-economic level:

Variable points	1	2	3	4	5
Daily meal	<1000	1000 - 2000	2000 - 3500	3500 - 5000	>5000
Number of beneficiaries	≥10	6 - 9	2 - 5	1	
Number of meals per day	1	2	At least 3		

Very low 3 - 4 ☐   High 9 - 10 ☐

Low 5 - 6 ☐   Very high 11 - 12 ☐

Medium 7 - 8 ☐

12) Do you use: Alcohol ☐ Tobacco ☐ Other drugs ☐

13) Are there any headache sufferers in your family? Yes ☐ No ☐

14) Do you often suffer from headaches? Yes ☐ No ☐

If yes:

15) How long have you suffered from headaches? Day ☐ Week ☐ Month ☐ Year ☐ If year, what is the estimated age of onset?…

- **CHARACTERISTICS OF CEPHALEA**

1) Where is your pain located? One side ☐ The whole head ☐ One side then the other ☐

2) What does your pain feel like? It hits ☐ It burns ☐ It squeezes ☐ It weighs ☐ It crushes ☐ Like a shock ☐ Like a stab wound ☐

3) When you feel pain, how would you rate its intensity (VAS)? Slight ☐ Moderate ☐ Severe ☐ Very severe ☐

4) How does your headache evolve? Per attack ☐ Ongoing ☐

5) If an attack, does it last between 4 and 72 hours? Yes ☐ No ☐

6) If you have an attack, how often do you have them? Daily ☐ Weekly ☐ Monthly ☐ Irregular ☐

7) Is your headache aggravated by routine physical activities (walking, climbing stairs) Yes ☐ No ☐

8) Is your headache accompanied by: The urge to vomit ☐ Vomiting ☐ Gene to light ☐ Gene to noise ☐

9) Have you had at least five seizures meeting criteria 5 and 8? Yes ☐ No ☐

10) Is your headache preceded by or accompanied by (aura):

Visual disturbances: Bright spots ☐ Flashes ☐ Broken lines ☐ Visual blur ☐ Blind zone ☐ Visual hallucinations/distortion ☐

Sensory or motor disorders: tingling, numbness, weakness of a limb Yes ☐ No ☐

Balance disorders, vertigo, loss of consciousness: Yes ☐ No ☐

11) At least one aura symptom develops progressively over ≥5 minutes and/or the various aura symptoms occur successively

Yes ☐ No ☐

12) Duration of each aura symptom 5 - 60 minutes: Yes ☐ No ☐

13) At least one aura symptom is unilateral: Yes ☐ No ☐

14) Aura accompanied or followed within 60 minutes by headache

Yes ☐ No ☐

15) Factors triggering seizures:

Stress: ☐

Hormonal factors: rule ☐ Oral contraception ☐

Dietary factors: alcohol ☐ chocolate ☐ other.................. ☐

-Sensory factors: Flashing light ☐ Striped décor ☐ Noise ☐ Odor ☐

Other: sleeping too long ☐ hypoglycemia ☐ Heat ☐

16) Treatment of headache: ....

17) Medical follow-up: General practitioner ☐ Specialist ☐

18) Use of a migraine diary: Yes ☐ No ☐

- **EVALUATION OF LOSS OF PRODUCTIVITY (MIDAS)**

N°	QUESTIONNAIRE	DAYS
1	How many days did you miss work (or school)?	
2	On how many other days did your work productivity drop by more than 50%?	
3	For how many days were you unable to carry out your usual household activities?	
4	For how many days was your productivity in household chores reduced by more than 50%?	

Continued

5	How many days did you miss out on family, social or leisure activities?
	TOTAL

- **HIT-6 scale**

	Never (6 points)	Rarely (8 points)	Sometimes (10 points)	Very often (11 points)	Constantly (13 points)
1) When you have headaches, is the pain intense?					
2) Is your ability to carry out your usual daily activities, including household chores, work, school or activities with others, limited because of your headaches?					
3) When you have headaches, would you like to be able to lie down?					
4) In the past 4 weeks, have you felt too tired to work or carry out your daily activities because of your headaches?					
5) In the past 4 weeks, have you experienced a feeling of "ras-le-bol" or annoyance because of your headaches?					
6) Over the past 4 weeks, has your ability to concentrate on your work or daily activities been limited because of your headaches?					
TOTAL					

Appendix 2: Migraine Diary

Month	Headache				Medicines		
Day	Type: CT or M	Duration	Intensity + ++ +++	Factors triggers	Type	Dosage	Efficiency
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Continued

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26
27
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29
30
31

:mild, ++ moderate, +++ severe, CT.