

MIGRAINE TREATMENT USING A PHYSICAL MEDICINE APPROACH

by Wesley D. Ulrich, M.D.
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Research done at:
Eyesight Associates of Middle Georgia
Box 6479
Warner Robins, GA 31095
Phone: 912/923-5872

Current Correspondence – after March 2005
Wesley D. Ulrich, M.D.
4667 N. Stratford Oaks Dr.
Macon, GA 31210
E-mail: wdulrich@bellsouth.net
Phone: 478-471-6026

ABSTRACT

An uncontrolled prospective study of headache patients over a 16-month period within an ophthalmology clinic practice was done. Thirty-four (54%) of 63 patients were diagnosed as having subacute or chronic vascular headaches. In response to evidence that environmental heat may destabilize autonomic control in migraine, these patients instituted prophylactic lifestyle changes to protect their backs from environmental heat and also applied gentle cooling over the spine. The average reduction of symptoms for the entire group was 70%. Twenty-nine of the 34 (85%), obtained at least 50% reduction in their headache symptoms. This study supports the thesis that there may be important neurohumoral connections between the splanchnic and cerebral circulation.

INTRODUCTION

Effective non-pharmacological treatment for patients who suffer from migraine and related headaches continues to be sought. Most patients with chronic headaches attempt to discover dietary and/or environmental factors that aggravate their pain. Judging from the sheer numbers who seek professional help, however, it is clear that great many fail to find anything that substantially offers relief by using various biofeedback methods⁽¹⁾. However, many patients and physicians simply do not have access to these procedures. Raskin reviewed the utility of these methods and concluded that they are primarily useful as adjunctive therapy⁽²⁾.

One little known approach to the vascular headache was developed in the early 1900's by Frederick Erdman. He observed that a significantly small proportion of the general population, perhaps five per cent, became almost physically debilitated when subjected to hot environments or excessive heat-stimulating treatment modalities. Mr. Erdman discovered that the malaise and other symptoms of these heat-sensitive patients often improved when they carefully cooled the immediate paraspinal region. The method was of particular benefit to patients with vascular headaches, chronic fatigue syndromes, some types of chronic backache, insulin-dependant diabetes with dysautonomic symptoms, and multiple sclerosis. He reasoned that patients with these disorders tend to have abnormal vascular tone which compromises the usual ability of the body to dynamically shunt blood from the extensive abdominal (splanchnic) circulation to the cerebral and skeletal muscle beds⁽³⁾. Mr. Erdman claimed that palpably perceptible changes that occur in the radial pulses while cooling or warming the paraspinal region are of critical diagnostic importance⁽³⁾. Hence, classical use of the "Erdman Methods" requires the practitioner to analyze changes in the radial pulse strength in order to know how much warm or cold stimulus to apply. The subjective nature and unestablished validity of such pulse analysis is a major reason the method was never published in the medical literature and is not known or used more widely.

After having had more than ten years of clinical and research experiences using the classical Erdman method, this author became convinced that an effective treatment protocol based on patient symptoms and response without pulse analysis could be developed. The opportunity to investigate this idea presented itself in a large full-service private ophthalmology practice in central Georgia.

PATIENTS AND METHOD

The ophthalmologists and optometrists within the practice routinely referred patients with a significant headache problem for this prospective (though unmasked and uncontrolled) initial study. Sixty-three patients were studied over a 16-month period. The goal was to identify a sufficient number of migraineurs who would continue the physical medicine treatment long enough to determine whether or not it was useful. The patients were queried about frequency, severity, pharmacological intervention, and time period over which the headaches had been a problem. Each patient was asked to grade the severity of his headache in terms of frequency, duration, and disability incurred. The duration (0 to 1hr, 2 to 4 hrs, 5 to 12 hrs, entire day, and more than one day) along with the disability resulting from the headache were combined subjectively to provide five grades of severity. A grade 1 headache was the least severe; a Grade 5 was most severe. The frequency (number of headaches per 60 day period) was multiplied by the grade to obtain the "Severity Index" (SI). Examination was limited to the cranial nerves; in most cases a complete ophthalmologic examination had already been done.

Many of the patients had previously had complete neurological workups including scans of the head so that diagnoses were well established. Each patient was seen only once. The follow-up contacts were planned to be by telephone calls at one, three, six, and twelve months. The final telephone contact was at the end of the study as a whole. In practice, however, such rigorous follow-up could not be maintained and data was obtained whenever time permitted.

The diagnoses and theory of treatment was explained to each patient. Each patient was given the instruction sheet (Figure 1) and shown how to make a 12-inch cotton-tip swab for self-application of a cooling agent.

RESULTS

Thirty-four (54%) of the 63 patients were included in the study (Table 1). Although it is common for headache types to be mixed, the goal of this study was to address vascular headaches *per se*.

The average response for all age groups was 70% (Table 2). The patient provided the degree of response as he serially evaluated the decrease in frequency, grade, duration and disability. Twenty-nine of the 34 patients (85%) reported at least 50% reduction in symptoms following treatment. Over half (55%) of the patients between ages of 16 and 45 years of age obtained 90 to 100% control.

There were no symptoms or set of symptoms, particularly those usually associated with dysautonomia, which correlated with a good clinical response (Table 3).

The average response time to obtain a 50% reduction of the symptoms was one month. If the one patient who required a year to reach that point is excluded, however, this figure is reduced to 10 days (Table 4).

COMMENTS

This study suggests that protection of the back from heat insult along with gentle cooling is quite effective in preventing migraine attacks. Eighty-five percent of the entire group obtained at least 50% relief from their symptoms, and the average reduction of symptoms for all age groups together was 70%. This response is similar to the effectiveness reported for beta-blocking agents such as propranolol and nadolol⁽⁴⁾. Only anecdotal comparison between propranolol and the thermal method can be made since only three patients reported adequate trial with propranolol. Patient #57 found it ineffective whereas the cold treatment resulted in 100% resolution of her headaches. Patients #46 and #74 obtained 50% response with cold treatment though propranolol had been ineffective or resulted in intolerable fatigue.

Although the response time is highly variable from one patient to another, the average response time is relatively short. The average patient experienced 50% reduction in symptoms in 18 days (0.6 month). This response profile is similar to that of beta-blocking agents. The cold therapy, however, is so benign and free of side effects that it rarely has to be discontinued except for ineffectiveness.

An initial purpose of the study was to identify symptomatic markers that would help characterize the patient who would respond to the cold therapy. It seemed plausible that a combination of symptoms that are usually associated with mild dysautonomia would be these markers; for example: cold hands or feet, low blood pressure, (orthostatic) dizziness, and episodic diarrhea or constipation. Inspection of Table 3 revealed no discernable symptom or pattern which would distinguish between those who would obtain >70% response and those who would experience <40% response. This is surprising. One would expect that symptoms of thermally induced dysautonomia would be predictably responsive to treatment. In the absence of such markers, however, one's treatment strategy for "vascular" headaches is reduced to giving the cold therapy for a fair trial on most everyone much as the patient or physician initially tries his favorite analgesic on every headache patient.

Speculation about the pathophysiology of migraine in the light of this is intriguing. Current evidence implicates serotonin in the development of vascular headaches. For centuries nausea, vomiting, and other gastro-intestinal symptoms have led practitioners to wonder what role the GI tract has in the etiology of migraine. Possibly serotonin or similar mediators can be modulated by thermal reflex stimulation of the complex intra-abdominal splanchnic nerve system. Some patients indeed discover that hot baths are associated with fatigue, but very few relate their headaches to such heat exposure. Probably this is because such baths have become part of a routine that feels "relaxing" and partly because the headaches are delayed until the following day (typically after having had still more heat exposure during sleep). Also, other confounding influences do not make one-to-one correspondence evident. For example, a 27 year old healthy electric utility lineman (not include in the study because of the acute nature of his headache) developed recalcitrant throbbing vertex headaches

after sitting in a hot-tub one weekend. The patient never connected the subsequent headache at all until he was asked about heat exposure. Two days of the cold treatment led to complete resolution of the headaches. Other patients may develop headaches post-operatively or during hospitalization, which do not respond to pharmacological agents but are alleviated by cold therapy. It is reasonable that vigorous thermal or vasodilating pharmacological agents can alter the homeostatic vasomotor neurohormonal mechanism either acutely or chronically. It is equally possible that such functional abnormalities can also be reversed to alleviate symptoms. Patients are also often tempted to use an icepack hoping to accelerate whatever process is occurring. Ice may numb acute spasm in traumatized muscles, but usually it is not the prudent therapy to control migraine headaches.

In spite of the evidence, it is difficult to bring oneself to believe that such a relatively simple remedy is effective for such an exasperating disorder. The patients were frequently skeptical to the point that they were reluctant to try the method even though it cost almost nothing, was virtually free of the side effects, and required no return office visit. Voluntary follow-up comments from the patients underscored their skepticism and often the patient complied only out of desperation.

Two conclusions arise from this study. The first is that in usual clinic settings a patient may well be advised to institute the three-week cold treatment method as a prophylactic trial while he is also given suitable pharmacological agents for his symptoms. Long-term pharmacologic agents are added later if necessary. The cold therapy is abandoned if one or two three-week courses prove ineffective. The second conclusion is that the method needs much wider testing before either its full utility or limitations are elucidated.

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FIGURE 1. INFORMATION FOR PATIENTS WITH MIGRAINE HEADACHES

GENERAL INSTRUCTIONS

Avoid getting your back overheated. Likewise, avoid exposure to excessive cold as well.

Dress comfortably but also:

- 1) Avoid hot showers and baths; use warm, not hot, water.
- 2) Avoid long hot car drives; use an air cushion for your back. If necessary, double up the air cushion and put a small freezer pack between the two layers about the level of the belt line to keep the middle of your back cool.
- 3) Sleep on your side; avoid hot covers. A hot water bottle for your feet is acceptable but not on your back. Heating pads are notorious for overheating one's back while asleep.
- 4) Avoid vinyl-covered chairs or sit sideways on them since they prevent the natural cooling.
- 5) Develop an awareness of overheating your back and simply do what is necessary to avoid it.

SPECIFIC INSTRUCTIONS

Remember that headaches are sometimes a serious medical sign. Anyone with a new or severe headache, especially one associated with numbness or paralysis of any kind, should promptly seek medical attention. Help-yourself remedies should not be applied to these headaches.

Witch hazel is used as a cooling agent because it provides a greater cooling stimulus than water. It evaporates faster, is not irritating usually even when used a lot and, is not as cold as ice which is too severe a stimulus for most persons.

Apply as directed from base of neck to the crease between your hips directly over the spinal column:

- 1) 10 times (with about one minute between applications to allow for evaporation) morning, noon, and evening; or, 15 times morning and evening for the first week, then...
- 2) 10 times morning and evening during the second week, then, ...
- 3) 10 times morning OR evening for the third week, then ...
- 4) evaluate your progress. If you are tolerating the cold and continuing to get better, continue using 10 to 15 applications a day until reaching a plateau. Then use 2 or 3 daily as necessary just keep "in tune." Many people need nothing more at that point unless some stress occurs whereafter they may need to reinitiate the program.

A few persons will only need a few cold applications to obtain relief. Most, however, will need two or three hundred applications; a few will need even more.

IF YOUR BLOOD PRESSURE RISES EXCESSIVELY (to more than 160/100) OR IF THE TREATMENT PRECIPITATES A HEADACHE, DO NOT CONTINUE USING THE COLD TREATMENT.

TABLE 1. DISTRIBUTION OF HEADACHE SYNDROMES

INCLUDED	Number	(%)
Vascular Headaches >1 month duration	34	(54)
EXCLUDED		
Headaches < 1 month duration	8	(13)
Sinus, ear, allergic etiology	4	(6)
Cervical or dorsal spinal etiology	4	(6)
Non-compliant	4	(6)
No follow-up data available	3	(5)
Unexplained spontaneous remission	3	(5)
Unclassifiable, confounded by trauma	2	(3)
Hypertensive	1	(2)
Total excluded	29	(46)
TOTAL NUMBER OF HEADACHE PATIENTS	63	(100)

TABLE 2. RESPONSE IN VARIOUS AGE GROUPS

Age Group, <15 years	16 - 30	31 - 45	46 - 60	61 - 75	>75	
Resolution of Symptoms (%)	90	100	100	90	100	75
At End of Study Period	85	100	100	75	75	50
	70	100	95	67	0	0
	50	100	90	65		
	0	95	90	50		
(Each number	80	75				

Represents		75		70			
One patient)		15		65			
				50			
				30			
Ave. Response of Group	59%	83%	76%	69%	58%	42%	
Size of Group	5	8	10	5	3	3	
Response Rate							
In Group, Number (%)	4 (80%)	7 (88%)	9 (90%)	5 (100%)	2 (67%)	2 (67%)	

Response rate for entire group: 29/34 (85%)
Average response for entire group: 70%

TABLE 3. SYMPTOMS ASSOCIATED WITH CLINICAL RESPONSE IN HEADACHES

Symptom or other clinical marker	Relief		
	<40%	50 to 70%	>70%
"yes" answers	No of "yes" (%)	No of "yes" (%)	No of "yes" (%)
Related to season of year	0/5 (0)	3/9 (33)	4/19 (21)
Related to extrinsic allergies	0/5 (0)	0/8 (0)	1/19 (5)
Related to foods eaten	0/5 (0)	1/9 (11)	3/19 (16)
Related to stress	3/5 (60)	5/9 (56)	11/19 (58)
Related to menstruation	2/2 (100)	1/7 (14)	5/13 (38)
Preceded by aura	4/5 (80)	3/9 (33)	8/19 (42)
Dizziness	2/5 (40)	6/9 (67)	14/19 (74)
Photophobia	5/5 (100)	8/9 (89)	16/20 (80)
Nausea	3/5 (60)	8/9 (89)	16/20 (80)

Loss or change of vision	4/5 (80)	8/9 (89)	17/19 (89)
Nervous personality	2/5 (40)	5/9 (56)	4/19 (21)
Undue fatigability	1/5 (20)	5/9 (56)	10/19 (53)
Insomnia	0/5 (0)	5/9 (56)	10/19 (53)
Diabetes	0/5 (0)	1/9 (11)	3/19 (16)
Low blood pressure	3/5 (60)	4/9 (44)	8/19 (42)
High blood pressure	1/5 (20)	1/9 (11)	5/19 (26)
Cold hands	3/5 (60)	3/9 (33)	8/19 (42)
Cold feet	3/5 (60)	6/9 (67)	11/19 (58)
Diarrhea	0/5 (0)	1/9 (11)	3/19 (16)
Constipation	2/5 (40)	4/9 (44)	5/19 (26)
Dizziness (not with headache)	2/5 (40)	6/9 (67)	12/19 (63)
Intolerance to medicine	1/5 (20)	2/9 (22)	3/19 (16)
Varicose veins	1/5 (20)	1/9 (11)	3/18 (17)

TABLE 4. PATIENT RESPONSE, SEVERITY, CHRONICITY, AND COMPLIANCE

PAT ID	AGE SEX	RESP %	SEV	A/60d	SI	CHRON years	COMP %	F/U mon	RES tm Half,mon
72	37m	100	3	60	180	0.5	100	6	12
67	62f	100	4	20	80	50	70	8	0.1
35	35f	100	2	30	60	1.5	100	8	0.5
64	23f	100	4	3	12	5	50	8	0.5
60	28f	100	5	2	10	1	15	15	1
52	28f	100	2	2	4	12	75	10	0.2

31	29f	100	2	0.7	1	12	70	14	0.5
38	25m	95	2	28	56	15	100	13	0.1
10	39f	95	4	1.5	6	5	100	16	0.1
27	9f	90	3	32	96	0.1	15	15	0.2
71	34f	90	2	16	32	4	100	6	0.5
77	45f	90	3	8	24	13	100	7	----
16	31f	90	4	0.5	2	10	100	15	0.5
53	8f	85	5	4	20	1	100	10	0.5
20	30f	80	4	20	80	6	100	15	0.2
51	85f	75	3	60	180	10	25	16	0.5
69	48f	75	2	60	120	2	70	7	1
61	66m	75	2.5	40	100	7	100	8	1
23	32f	75	4	24	96	1	100	15	1
30	42f	75	5	8	40	30	100	14	1.5
75	40f	70	2	60	120	10	90	5	0.5
18	15m	70	2	2	4	9	33	15	0.2
34	52f	67	3	60	180	20	100	14	0.2
76	50m	65	2	60	120	35	100	3	2
65	32f	65	5	8	40	13	100	8	0.8
46	32f	50	3	60	180	11	50	15	0.5
40	82f	50	1.5	60	90	50	100	12	0.5
74	48f	50	5	6	30	2	100	5	1
15	8f	50	1	8	8	1	75	16	0.5
63	36f	30	4	1.5	6	0.2	100	8	N/A
70	28f	15	3	16	48	25	100	6	N/A
68	68m	0	2	60	120	35	100	7	N/A
66	77m	0	4	16	64	6	100	5	N/A
48	13m	0	2	2	4	10	100	11	N/A

PAT ID = patient identification number; RESP = response (resolution) of symptoms; SEV = severity; A/60d = attacks per 60 day period; SI = severity index; CHRON = chronicity; COMP = compliance; F/U = follow-up period in months; RE tm half, mon = months to reduce symptoms by 50%.

Note: ID numbers are chart references only.

