Bioelectrical Stimulation In An Integrated Treatment for Macular Degeneration, Retinitis Pigmentosa, Glaucoma, CMV -Retinitis, & Diabetic Retinopathy

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Abstract

From December 1995 to September 1997, thirty individuals diagnosed with typically untreatable eye diseases including retinitis pigmentosa, macular degeneration, CMV -retinitis, Stargaardt's and others attended an integrated treatment protocol employing bioelectrical stimulation, nutritional and herbal supplementation (including Ginkgo Biloba, Lutein, DHA) and other health care modalities. The study was monitored by a neuroophthalmologist, evaluating standard clinical visual function examinations, including objective field of vision tests obtained by the Humphrey FOV analyzer, visual acuity and color discrimination. Four controls were evaluated, with the monitors masked, and although the sample was small, the results were significant in their lack of change. Follow- up examinations of the graduates were provided, establishing efficacy of the rehabilitative progress made originally, including a review of two graduates who participated in a five- day course of treatment at the six month-post treatment period. Therapy protocol consisted mainly of bioelectrical stimulation with the Electro-Acuscope 80. Overall results showed remarkable increase in visual function in visual acuity in most, and clearly established the safety of the integrated treatment protocol. Long-term follow-up indicate maintenance and continued improvement when compliance of home program is continued. Participants of the five-day refresher demonstrated a marked increase in visual function, in visual acuity and field of vision.

Keywords

Bioelectrical, CMV -Retinitis, DHA, Electro-Acuscope, Ginkgo Biloba, Lutein, macular degeneration, nutrition, retinitis pigmentosa, Stargaardt's.

Discussion

For the past twenty-five years, both of us have dealt with significant visual impairment. Halloran as a practitioner and patient and Reader as a medical specialist Most of the diseases that we are dealing with have been designated as chronic. Progressive, untreatable and uncurablc. The majority of these patients are left on their own with no resources available to try to improve their situation. The numbers are staggering and increasing as our population ages. The National Institutes of Health estimates that there are nearly eighteen million Americans suffering from serious visual impairments, with nearly half being diagnosed with macular degeneration.

Halloran was diagnosed with a genetic eye disorder, retinitis pigmentosa, and Reader as a neuroophthalmologist, have individually and collectively been searching for methods and therapies that may be of some benefit We feel that we have been fortunate to rediscover some ancient and natural methods that definitely impact positively on visual function. Also, we have integrated the most technically advanced bioelectrical stimulation devices available to promote cellular healing. We believe that this marriage of western medical technology and eastern traditional healing practices provides the most effective treatment modality for those diagnosed with degenerative and progressive eye disorders.

From December 1995 to September 1997, thirty sight impaired individuals participated in a two-week course of an integrated treatment protocol for visual rehabilitation. The course is based on the Integrated Visual Healing program, developed by Halloran in the 1980's). This report is an extension of a pilot study conducted from 1983- 1985, documenting 114 participants4 with a similar treatment protocol and results as encompassed in this current two-year study. The 1983~85 study was monitored by independent optometrists. This study has more objective and medically monitored documentation. Although this study lacks the electrophysiological ERG's, the intent of this two-year study was to demonstrate safety and the need for further investigation.

Material and Methods

The 1995-97 group had an age range of 13 to 83. with the following diagnoses: twenty cases of retinitis pigmentosa (RP), seven macular degeneration (AMD - age related macular degeneration) including two cases of Stargaardt's, a juvenile form of macular degeneration, one diabetic retinopathy, one glaucoma (GL), and one CMV -retinitis (related to the AIDS virus).

Pre- and post-treatment visual testing was monitored by August L. Reader. M.D. F .A.C.S. Visual examinations consisted of field of vision (utilizing the Humphrey Field Analyzer Test, 30-2 Central, a computerized objective test of peripheral vision). standardized testing of best-corrected visual acuity (reading and fine recognition sight). Ishihara Color Plate identification. slit lamp examination and intraocular pressure.

A two-week intensive therapeutic session provided approximately thirty hours of primary treatments. An average of thirty treatments of bioelectrical stimulation of the Acu- Eye and Acuscope protocol With the Electro-Acuscope 80 were performed using 2.5 Micro Hertz and 25-50 micro amps intensity. These therapies were performed initially by the therapist and later taught to the individual patients for their self-application. The patients were encouraged to use the unit a minimum of three times per day, and up to six times per day. The patients received other supportive therapies including eight sessions of applied kinesiology and neuro-lymphatic deep stimulation, eight treatments of deep tissue acupressure6 in the head/neck and shoulder region, twenty sessions of color-shape identification therapy (Tyro Instrument). Nutritional and herbal support was provided for one group of seven participants (September 1996), all others were instructed to incorporate the supplemental program for on-going long term use? Nutritional regime consisted of a broad based complete multiple vitamin and mineral supplement (Life Pat, IDN, Provo Utah), emphasizing specific nutrients known to impact the visual system which included: DHA 8, Omega 3 Fatty Acid. Lutein9, Ginkgo Biloba la, Pycnogenol11. and a combination of antioxidants such as carotenoids.

The integrated rehabilitative program included other disciplines such as stress rnanagemenr4, acupressure based on acupuncture points for improving eye health. And other exercises to keep circulation optimum for on-going overall health benefits.

Results

The following tables (fables 1 .4) illustrate the improvements noted in this two-year study. These tables depict the mean deviation on visual field testing from normal compared from the pre-treatment period to the post-treatment period. Also included are the visual acuities and the color vision testing performed before and after the treatment protocols. The mean improvement in visual field function for all patients was 3.16 decibels. The improvement in the RP patients was only 2.58 decibels, while Macular Degeneration improved 4.61 db. Average visual acuity improvements were 0.98 lines. Color vision improved on average of 1.71 out of 18 color plates per eye in patients with Macular Degeneration, but only 0.35 of 18 plates in the Retinitis Pigmentosa patients (Ishihara Color Plate test for color vision anomalies is not considered the most reliable method of color vision testing).

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Key Code Explanation

ID-Code = Diagnosis: First & Last Initials-Age -Right Eye MD=Macular Degeneration RP=Retinitis Pigmentosa GL=Glaucoma CMV=Retinitis MD-A=Mean Deviation on Humphrey Field of Vision Analyzer Pre-treatment MD-B=Post treatment Test Normal Mean Deviation Range: -6 to +4 VA-A=Visual Acuity (Distance) Pre-treatment VA-B=Visual Acuity Post-treatment CT-A=Ishihara Color Test (Ishihara) Pre-treatment (18 color plates total) CT-B=Ishihara Color Test at Post treatment

Controls	Pre--	Post-	Particip.	Pre--	Post-
JL –RE	-26.66	-27.35	MW-RE	-29.13	-7.86
JL-LE	-26.96	-27.84	MW-LE	-29.44	-15.47
RM-RE	-32.23	-32.58	RO-RE	-32.07	-18.89
RM-LE	-32.53	-32.75	RO-LE	-31.58	-13.07
TC-RE	-31.63	-31.63	IM-RE	-24.04	-23.11
TO-LE	-31.55	-31.11	IM-LE	-25.26	-21.82
MH-RE	-24.25	-22.97*	BF-RE	-28.23	-27.86
MH-LE	-25.64	-20.56*	BF-LE	-29.29	-28.85
*Individual took pain medication and muscle relaxant 90 minutes prior to test, VA dramatically decreased on post examination					

Table 1 depicts the most significant objective evidence demonstrated during the two-year period in the field of vision test, by the Humphrey FOV Analyzer (30-2 Central). The measurements outlined reflect the Mean Deviation, an analysis produced by the computerized testing device. Mean deviation is a comparison of the individual testing to a 'normal' population by sex and age. Normal range of mean deviation measurement for healthy population is -6 to +4. Table 1 demonstrates the difference between a control (masked to the monitor) groups of RP to RP participants. The control group was tested with the participant group on both pre~ and post-examination days, receiving the identical testing procedure in a two week period.

Control data for the most part was the same. Participants in the integrated treatment protocol showed significant improvement in post field of vision analysis with the Humphrey Fay device. Recovery of field of vision is not usually associated with Retinitis Pigmentosa or any of the other disorders involved in the study.

Table 2 - Macular Degeneration Results

ID -CODE	MD-A	MD-B	VA-A	VA-B	CT-A	CT-B
MD-AH-83-RE	-7.19	-5.19	20/400	20/200+2	12	12
Left	N/A	-18.89	CF@1'>	CF@1'	0	0
MD-EK-73-RE	-22.64	-20.26	20/60	20/40	0	2.5
Left	-18.51	-16.35	20/40	20/40+1	0	14
MD-SY-58-RE	-10.99	-8.19	20/300+1	20/200	14	15.5
Left	-11.84	-4.97	CF@5'	20/100+1	14	15
MD-JA-35-RE	-16.57	-15.38	CF@3'	CF@13'	6	6
Left	-15.08	-15.85	CF@3'	20/200	6.5	5
MD-RO-35-RE>	-32.07	-18.89	20/60	20/50+1	0	2
Left	-31.58	-13.07	20/60	20/50	0	1.5
MD-EL-35-RE	-12.75	-12.87	20/60+1-1	20/60	11	11
Left	-6.27	-3.73	20/50-1	20/50+1	15.5	15

N/A = not able to perform test due to poor visual function

Table 3 - Glaucoma & CMV -Retinitis Results

ID-CODE	MD-A	MD-B	VA-A	VA-B	CT-A	CT-B
GL-PM-67-RE	-18.3	-10.86	20/40	20/20+1	N/A	11.5
Left	-6.04	-5.46	20/30-1	20/25+1	N/A	12.5
CMB-GW-41-RE	-10.46	-9.07	20/30	20/25-1	18	18
Left	-6.15	-2.29	20/25	20/20+	18	1
N/A = Unable to locate pre-testing data						

Table 4 - Retinitis Pigmentosa Results

ID-CODE	MD-A	MD-B	VA-A	VA-B	CT-A	CT-B
RP-MW-65-RE	-29.13	-7.86	20/70-2+1	20/70+1	0.5	0.5
Left	-29.44	-15.47	20/100-2	20/100+1	0	0.5
RP-JO-46-RE	N/A	-28.47	20/200-1	20/70+1	1.5	2.5
Left	-30.95	-27.75	20/400	20/200	1	1.5
RP-SD-13-RE	-27.55	-26.5	20/20	20/20+1	18	14
Left	-29.57	-29.99	20/60+2	20/25-1	12	12
RP-IM-16-RE	-24.04	-23.11	20/200+1	20/100	11	11.5
Left	-25.26	-27.82	20/200	20/100	11	13
RP-ES-59-RE	-30.24	2.17	HM@1’	HM@2’	0	0
Left	-19.36	-22.85	HM@0.5’	HM@ 0.5’	0	0
RP-RS-72-RE	-28.81	-28.92	CF@ 1FT	20/400	0	1.5
Left	-28.3	-28.1	CF@ 1FT	20/200	0	1
RP-GF-50-RE	-26.69	-25.79	20/20+3	20/15	17	17.5
Left	-28.41	-27.1	20/20	20/15-1	17	17.5
RP-TC-50-RE	-31.56	-31.42	CF@1’	CF@2-3’	0	0.5
Left	-31.02	-29.69	CF@1.5’	CF@1-1.5’	0	0
RP-KH-48-RE	-25.19	-25.77	20/30+1	20/30-1	17	16.5
Left	-24.64	-23.6	20/25-3	20/25	17.5	17
RP-BF-72-RE	-2e+1	-2e+1	20/40+2	20/30-2+1	14	1
Left	-2e+1	-2e+1	CF@ 3’	CF@6’	0	0.5
RP-KH-45-RE	-31.67	-31.53	20/200	20/200	0.5	0

Left	-32.06	-31.86	20/200	20/100	0	1.5
RP-HC-60-RE	-24.9	-25.42	20/15	20/15+2	17.5	17
Left	-24.1	-2e+1	20/15	20/15+2	18	17
RP-ME-32-RE	-28.69	-30.19	20/200	20/100+1	8	6
Left	-28.56	-28.99	20/200	20/100-2	8	7
RP-TT-37-RE	-29.41	-28.54	20/30+1	20/25-2	10.5	11
Left	-28.84	-29.61	20/30-1	20/30	11	12.5
RP-BT-32-RE	-31.03	-31.67	20/60+1	20/50+1	2	6
Left	-31.94	-31.88	20/50-1	20/40+1	1	6
N/A = Not available due to computer failure						

Conclusion

This two-year study clearly shows that bioelectrical stimulation to acupuncture points around the eyes and face have definite positive affects on visual functioning. These techniques. in conjunction with other complementary therapies, have clearly demonstrated that chronic progressive visual loss from several different sources can be reversed to some degree. More importantly, the improvements in activities of daily living and the quality of life of these patients has been dramatically impacted.

This small study in conjunction with the larger study performed in the mid 80's, emphasizes the need for more research into alternative methods. The information we have thus far obtained only corroborates our previous beliefs that these methods provide patients with some hope for cure.

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The Effects of Electric Currents on ATP Generation, Protein Synthesis, and Membrane Transport

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Abstract: The effects of electro stimulation on the ATP concentrations in rat skin as well as protein synthesis and membrane transport were evaluated. It was found that electro stimulation of the skin using direct current from 10 to 1000 micro amps increased ATP concentrations in the tissue by up to 500% and

stimulated amino acid incorporation into the proteins by up to 123 %. The effects of electro stimulation on ATP production can be explained by proton movements on the basis of the chemiosmotic theory of Mitchell, while transport functions are controlled by modifications in the electrical gradients across the membranes. It was noted that electro stimulation exceeding 1000 micro amps has the potential of reducing ATP levels. DNA metabolism was not affected by electrical stimulation.

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Macular Degeneration Treatment with Nutrients and Micro Current Electricity

Merrill J. Allen, O.D., Ph.D, John B. Jarding, O.D.,Ralph Zehner, O.D.

Introduction

This is the second report of a study of age related macular degeneration (AMD). The first report covered from July 1985 to July 1992 and was published in the fall of 1993. The positive results to date in this and in the earlier report are the slowing or reversing of the progress of AMD for most subjects.

This is exciting because the dry type of AMD is considered to be untreatable and can progress to the wet type which rapidly destroys vision. ABC's television show "20/20" (Dc. 6 '96) explained that 13 million Americans now have AMD. By the time the baby boomers reach age 65. 25% of Americans, or 30 million people, will have AMD. Happily, we are becoming aware of tutritional and electrical factors that can retard or reverse macular degeneration.

Leland D. Michael, O.D. of Rapid City, South Dakota, began studying electricity on the eyes in 1985 following his successful experience with using electricity to treat his own retinal detachment. Merrill Allen became the research designer and coordinator. Ralph Zehner began studying his tweleve subjects in July 1991. When "Doc Mike" became terminally ill, he arranged for John Jarding to continue the study. Jarding had thirty-four new subjects from August 1992 to May 1998. The total number of subjects in this report is forty-six.

Procedure

Each subject was independently confirmed as having dry macular degeneration. The nutritional supplements used by Zehner's subjects were similar to those used in the earlier study. 1 Jarding's more recent nutrients are shown in Figure 1 (p. 212). The additional nutrients used are bilberry, rutin and taurine.

In addition to nutrients taken daily, all subjects received micro ampere electricity applied to each eye's closed lids. Zehner's subjects were treated once per week for six weeks, then once per month. Jarding's subjects were treated several times per week.

Results

Figure 2 (p. 212) shows Zehner's twelve subjects. Figure 3 (p. 213) shows Jarding's 34 subjects. For Figures 2 and 3, start date is the date the subject received the first treatment; DOB means date of birth; Acuity means the denominator of the Snellen Fraction; R means Right Eye, L means Left Eye. Change means the number of letters lost (-), or gained (+) from the initial acuity to the final acuity. There were five letters in each line of acuity. To go from 20/30-2 to 20/20 is a gain of 12 letters. (20/30-2 to 20/30 = +2 letters. 20/30 to 20/25 = +5 letters. 20/25 to 20/20 = +5 letters.) Comments provide unusual events.

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Discussion

The data are presented according to the starting date. Jarding's subjects showed improvement while Zehner's showed a small loss. The changes in nutrition and the increase in the number of electrical treatments explains the improved success of Jarding's procedure compared to the earlier procedure used by Zehner.

At each office visit the patient's acuity was checked. Because many subjects reported better-vision as they left the office. Jarding began checking acuity both at the start and at the end of the office visit. Visual acuity usually improved following the electrical stimulation of the eyes. This suggests that still more frequent treatments would be beneficial.

This study is divided into two parts: Figure 2 is data from Zehner; Figure 3 is data from Jarding. The Electro-Acuscope 80, which is no longer available, was used earlier by Michael and in this study by Zehner. Jarding used the Micro-Stim 4006 which has a different output wave form compared to the Electro-Acuscope 80. The Micro-Stim 400 may be superior to the older machine, but we can't be sure because the the Micro-Stim 400 was used more frequently. The basic electrical stimulus parameters are: 200 micro-amperes at +9 volts, alternating, square wave current.

For Zehner's subjects there was an average loss of 3 letters of visual acuity per eye over a 2 year period. For Jarding's subjects there was an average gain of 8.5 letters of acuity per eye.

Newsome's research2 tested the value of zinc in treating macular degeneration. He used the same nutrients in the test and congrol groups. He added zinc only to the test group. The result was a slowing of the loss of vision of the 80 subjects in the test group receiving zinc when compared to the 71 subjects in the control group who did not receive zinc. On average his control group lost 7.1 letters of acuity and his test group lost 4.1 lett4ers of acuity in two years. His (and our) acuity test chart had 5 letters per line.

Conclusions

The results of this study strongly indicate that nutrition and electrical stimulation are able to delay or reverse the progress of macular degeneration.

The fact that acuity usually improved within minutes of electrical stimulation shows that micro current electricity applied to the eyelids is beneficial. The fact that a change in nutrients to include taurine, rutin and bilberry extract improved the success of treatment agrees with the recent literature7-10 on the importance of nutrition to the retina

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Figure 1. Nutrients used in treatment for Macular Degeneration

Nutritional Supplement	Two Per Day
Beta Carotene	40,000 IU
Natural Vitamin E	400 IU
Vitamin C	1500 mg
Citrus Bioflavonoid Complex	250 mg
Quercetin	100 mg
Bilberry Extract	10 mg
Rutin	100 mg
Zinc	25 mg
Selenium	100 mcg
Taurine	200 mg
N-Acetyl-Cysteine	200 mg
L-Glutathione	10 mg
Vitaming B-2	50 mg

Figure 2. Changes in Zehners 12 subjects using nutrients and micro-current electricity

Z/ehner				**Start Accuity**			**End Accuity**		**Change**		
Name:	**Sex**	**D.O.B**	**Start Date**	**R20/**	**L20/**	**End Date**	**R20/**	**L20/**	**R**	**L**	**Comments**
M.D.	F	5/30/31	7/1/91	30-1	30	4/28/98	20	20	+11	+10	Cataract Surgery 10/94
M.H.	F	10/3/10	7/5/91	40-2	60-1	2/2/94	70-2	200-1	-14	-16	Deceased
J.E.	F	5/13/20	7/23/91	60	80-1	11/18/93	50+1	60-2	+6	+9	Subject Left India
C.S.	F	9/5/02	7/26/91	70+1	60+2	9/13/96	60	30-2	+3	+10	Cataract Surgery 7/96
M.R.	F	5/12/23	8/30/91	30-1	40-1	5/1/98	20-1	50	+10	-4	Cataract Surgery 2/92
D.G.	F	1/20/18	10/17/91	30-2	400	9/26/95	80-1	400	-24	0	
D.F.	M	2/6/35	12/20/95	30	20-1	4/23/98	30+2	20-2	+2	-1	

L.P.	F	12/1/11	10/17/96	70-1	80+1	4/30/98	100-1	100+1	-10	-5	Poor Health
P.B.	F	10/21/18	11/22/96	60-1	60-1	5/20/98	80	50-1	-7	+5	
I.C.	F	9/7/07	12/2/96	400	50-2	1/5/98	400	400	0	-35	
C.H.	F	7/18/23	12/12/96	40+1	40+2	4/27/98	50+2	50+1	-4	-4	
H.K.	F	8/11/15	4/27/97	80-1	20-2	12/15/97	60	20-3	+11	-1	Poor Health

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Figure 2. Changes in Zehners 12 subjects using nutrients and micro-current electricity

Jardin g				**Start Accuity**			**End Accuity**		**Change**		
Name:	**Sex**	**D.O.B**	**Start Date**	**R20/**	**L20/**	**End Date**	**R20/**	**L20/**	**R**	**L**	**Comments**
F.T.	F	7/31/23	8/20/92	50-3	25	2/4/98	30	25+1	13	1	
J.B.	F	11/1/05	8/24/92	40-2	25-1	2/13/98	400	25-2	-33	1	Hemorrhage 12/95
Y.H.	F	3/30314	12/21/92	60+3	25+3	12/15/95	70	25+3	-8	0	
C.B.	M	9/10/24	2/9/93	400	40-1	2/12/98	200	200	0	2	
R.E.	F	7/9/19	4/1/93	60	40-2	2/18/98	200	40-2	-20	0	
A.P.	M	12/28/18	5/3/93	20-1	400	5/17/95	30-1	80-2	-10	18	Hemorrhage 2/95
M.C.	F	8/10/18	5/25/93	60-2	50-1	2/11/98	40-1	80+1	11	-28	
L.0.	M	8/23/09	8/19/93	25+3	400	12/11/96	40-1	CF3Ft	-14	-5	
B.B.	M	6/10/18	11/9/93	25	20+3	10/23/95	15-2	15	8	2	
G.S.	F	9/13/22	1/21/94	60	100	2/4/98	80-2	60-1	-12	14	
M.J.	F	10/25/31	1/26/94	25	40	12/12/97	20	30+2	5	7	

J.D.	M	7/23/26	9/30/94	70	400	10/27/95	100	400	-5	0	
W.K.	M	12/11/19	4/21/95	300	40+2	4/18/97	200+1	40	11	-2	
H.R.	F	12/25/10	8/7/95	60	400	10/14/97	40+1	200	11	10	
E.C.	F	12/30/16	11/13/96	400	60+2	2/5/98	400	30-2	0	10	
H.H.	F	2/2/28	12/6/96	50-2	60	2/9/98	15-3	15-2	19	23	
M.G.	F	12/12/34	1/3/97	40	50	2/18/98	15-1	50-2	15	-2	
N.S.	F	5/18/26	2/27/97	200	70	10/8/97	20	25-3	0	22	
B.P.	F	12/15/36	4/22/97	50+2	40	1/27/98	20	25-2	18	8	
V.N.	F	5/9/26	5/19/97	40	40	2/19/98	25+2	30-2	12	3	
L.S.	F	9/9/20	6/23/97	30-1	25-2	2/24/98	25+2	25-2	8	0	
M.S.	F	9/14/15	8/15/97	70	200	1/20/98	50-1	80-1	9	14	
D.T.	M	8/25/24	9/11/97	40-2	50+2	2/20/98	20-1	20	16	18	
R.S.	M	3/4/33	9/23/97	400	LP	9/29/97	400	400	0	1	
V.C.	F	11/6/24	9/26/97	80	60+2	1/20/98	50+2	40-2	17	6	
H.C.	F	4/27/23	10/10/97	50-2	30-1	2/19/98	80-2	25-1	-15	-5	Hemorrhage 1/98
R.C.	M	3/14/20	11/24/97	LP	300	1/30/98	LP	100+1	0	20	
E.L.	M	9/7/14	12/5/97	LP	70	2/17/98	LP	50-1	0	9	
L.T.	M	6/21/12	12/22/97	60+1	50-2	1/30/98	60+2	30-2	1	10	
A.D.	M	1/16/18	1/12/98	40	50-1	1/15/98	20-2	20-2	13	19	
R.P.	F	1/18/34	1/19/98	200	30-2	1/22/98	100	20-2	10	10	
D.W.	F	5/18/13	1/27/98	200	200	2/20/98	200	400	0	-10	
V.H.	M	13/12/20	2/2/98	CF8	CF6	2/13/98	200	200	?-+4	?+6	

L.E.	M	8/10/29	2/16/98	200	100	2/19/98	60+2	100	12	0	

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