

An Interpretation of the Probable Cause of Chronic Intolerable Pain at the Base of my Feet

Special Report Requested by

Dr. Robert F. Abbey, Jr.

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Delayed Delivery

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U. S. A.

Preface

I have been feeling extremely sorry to the sponsors of my Wind Research Laboratory and to Dean Oxtoby of The Division of Physical Sciences for not achieving my promised research, as originally planned. As you know, I began working on the research being encouraged by the 17 January 1996 letter stating, in effect, that my blood sugar control is wonderful and my diabetes will not influence my health or longevity. The letter was used for my grant negotiation, in support of my health.

Unexpectedly and coincidentally, seven months thereafter, on 17 August 1996, I began suffering from the chronic severe pain at the base of my feet, resulting in ambulatory difficulty. Furthermore, neither the cause of pain nor treatment method has been established.

Now the intolerable pain is accompanied by my cold feet, feeling like cold-blooded Homosapiens. I am, hereby submitting you "An Interpretation of the Probable Cause of the Pain" written to the best of my meteorology-oriented analyses, which could be different from the medical analyses by each doctor.



REFERENCES

dd..... Delayed Delivery, date undecided

J.....Written in Japanese, whole or in part

References will be available through
Wind Research Laboratory
(773) 702-8136

- 1dd Letter to Prime-care Physician, 28 MAY 97
- 2dd Computer file of Fujita's Daily Medical Data, JUN 95 to MAY 97
- 3dd Life with my wife, Sumiko (Susie), 30 APR 97
- 4 Internet: Mediconsult 1996, 9 pages on Antidiabetic Oral Agents, JUN 97
- 5 Internet: Diabeta 1996, 6 pages on Diabeta, JUN 97
- 6 Physician's Desk Reference, pages 1265 and 1266, 1997
- 7 Merck Manual, 16th Edition Vol. 2 pages 593 and 594, 1996
- 8 Fujita: Mystery of Severe Storms, WRL paper 239, OCT 92
- 9J Fujita: Life of a Meteorologist, 1st Addendum to Reference 8, JUL 96
- 10J Fujita: Late Years of a Meteorologist, 2nd Addendum to Reference 8, MAR 97
- 11dd Selected letters from University of Chicago doctors
- 12J Selected letters from U.S. and Japanese meteorologists
- 13J Diabetes Issue, Journal of Japan Medical Association, p1470-1361, NOV 96
- 14J Diabetes Issue, NHK Health Today, 174 pages, NOV 96
- 15J Diabetes Issue, Mainichi Newspaper, LIFE, 98 pages, JUL 96
- 16 Internet: Hydrochlorothiazide, 11 pages, JUN 97
- 17J Home Doctor, Shogakukan, 864 pages, APR 69

1. Early Indication of My Diabetes

Because I had no symptom of diabetes until August 1995, it is not feasible to identify the earliest year of my diabetes. Fig. A suggests the possible onset of my border-line diabetes in 1989 (see Fig. 2.7, Ref. 10J).

Only 9 days after taking hydrochlorothiazide, I felt cold legs on 20 August 1995 (Fig. B). I could not stay in air-conditioned offices at NCAR. The Denver airport was so cold for me that I had to walk around vigorously inside the waiting room. Other symptoms that developed were dry mouth and frequent urine at night. Doctor told me "I have not received such a complaint from anyone". Finally, a large blue spot formed on my leg on 8 November 1995 (see Fig. B, Ref. 10J)

SIDE EFFECTS REPORTED (Too late for me)

(Ref. 17J, Apr. 1969) Extended use of HCTH will increase blood sugar.

(Ref. 15J, Jul. 1996) Table 1, p61 HCTH, diuresis will reduce insulin; take potassium

(Ref. 16, Jun. 1997 Internet) Could cause unwanted side effects; Long-term treatment may impair glucose tolerance, mimicking diabetes

I must be an extraordinary person to induce severe cold legs after using 25 mg/day HCTH for very short 9 days. It took a long time until my cold-leg sensation was over (Fig. P).

It is very likely that HCTH increased my glucose level to A₁C 8.2% when I was diagnosed on 14 November 1995 to have mild diabetes.

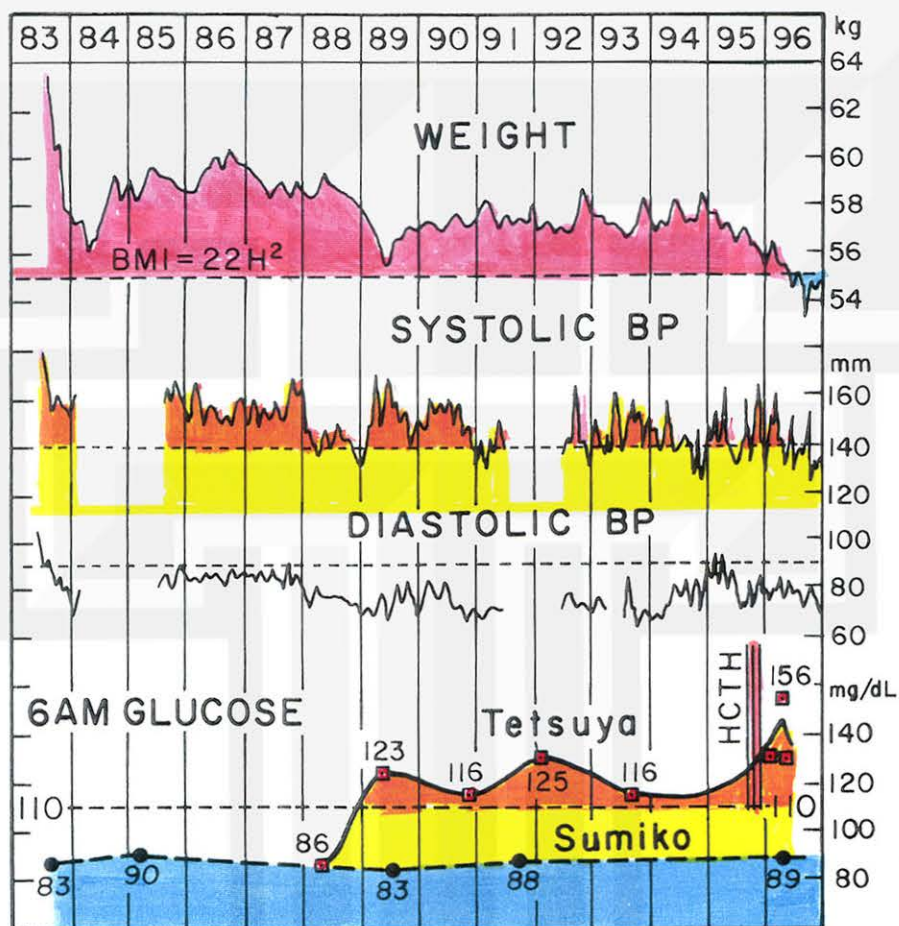


Fig. 2.7 A long-term variation of my 6 a.m. weight and systolic and diastolic blood pressure. I noticed in 1996 that my fasting glucose has been above the upper limit of the normal value of 110 mg/dL since 1989. Whereas, my wife's fasting glucose remained in the 80 to 90 mg/dL range throughout.

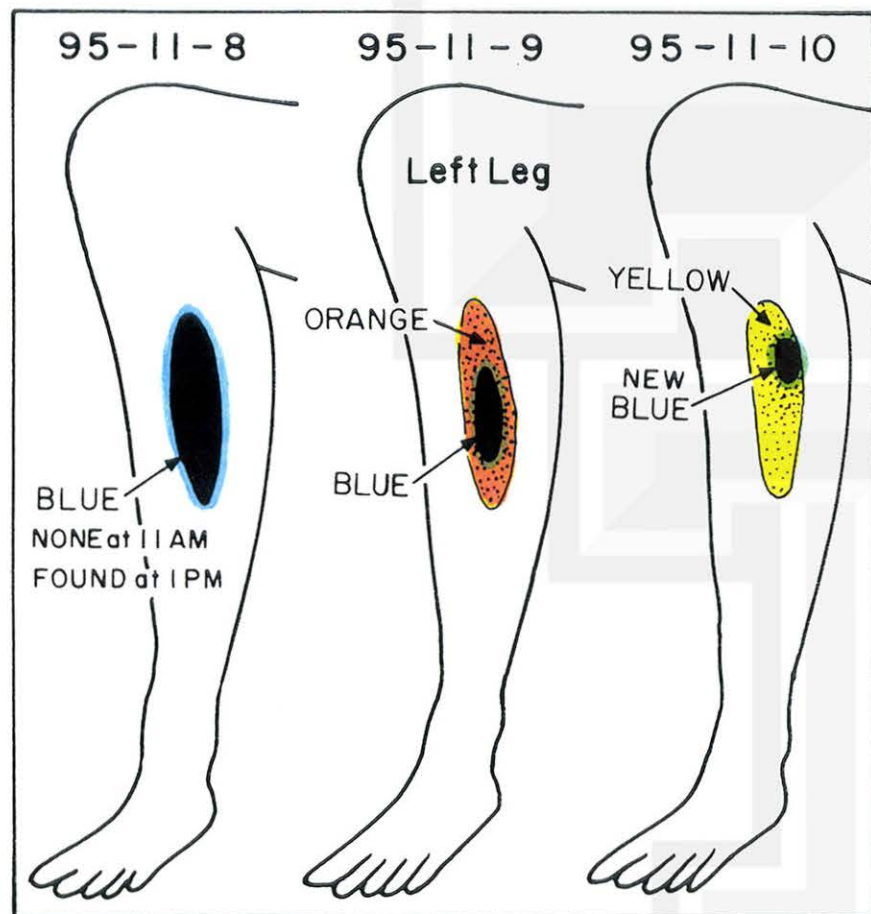


Fig. 2.6 A very large spot formed suddenly on my left leg. The shallow-depth spot turned orange in color, then finally to yellow, and disappeared three days later. The spot gave me an impression of a shallow, internal bleeding due to ???

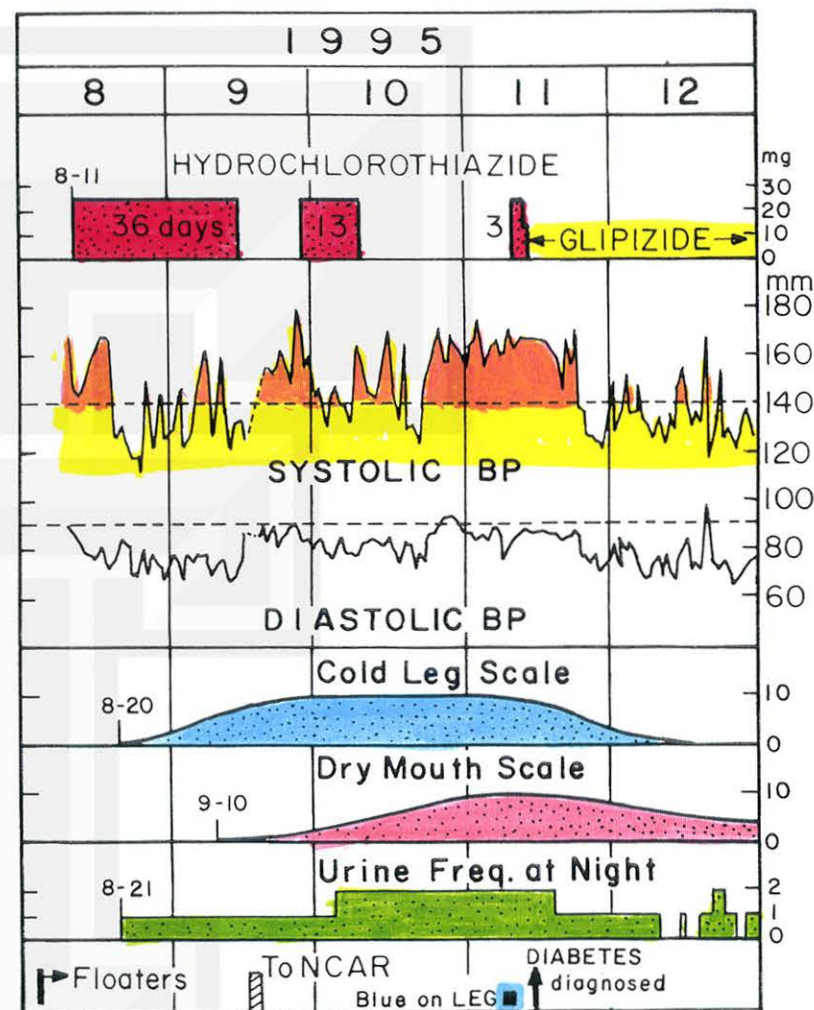


Fig. 2.5 Hypertension pills, hydrochlorothiazide I took in three different periods in August, September, and October 1995. The 168 mm systolic blood pressure on 10 August initiated the medication, 25 mg pill daily. As early as 20 August I began feeling cold legs, dry mouth and frequent urine at night.

2. Changing Glipizide to Diabeta

My doctor instructed me to take 5mg Glipizide daily. The medication did not cause any problem, except that my body weight decreased from 56.5 kg (124.6 lbs) to 54.5 kg (120.2 lbs) in 40 days or 2 kg (4.4 lbs) weight loss (Fig. C)

Doctor suggested me to eat at least 2200 Kcal/day and take more diabetic pills, when necessary. He told me to take Diabeta, instead of Glipizide. I asked him the difference in their strengths. "Same", he said and instructed me to take 5 mg Diabeta daily.

I experienced feeling of hunger and shaky hand, approximately two weeks after taking Diabeta for six (6) consecutive days. "This is a very long time lag", I thought. It is hard to explain this side effect without assuming [1] Very long half-decay period and [2] high potency of Diabeta. I gave Jim Partacz, my Co-principal Investigator my dosage vs. glucose data of Glipizide and Diabeta. His quick answer was the 1 to 2 potency ratio. He also computed the lag-correlation of the side effect to be between one to two weeks. These results explain why I had been feeling hunger long after taking 5 mg Diabeta. Several times, I thought I might pass out in my office.



SIDE EFFECTS REPORTED (Could be too late for me)

(Ref. 7 Merek Manual, 16th Ed. Vol. 2, 1996) Daily Dosage Range: Diabeta 2.5-20 mg, Glipizide 5-40 mg.

(Ref. 4 Internet, 1997) Some elderly people may need a lower dose of 1.25 to 2.5 mg of Diabeta a day at first.

(Ref. 6 Physicians Desk Reference, 1997) For NIDDM, proper dietary management alone may be effective in controlling blood glucose and symptoms of hyperglycemia.

Now, I am not sure if the increase in my daily food from 1500 to 2200 Kcal was the only solution for me or not (Fig. D made from Ref. 2dd). A 5 mg/day dosage of Diabeta was excessive for a 75-year old, 55 kg (121 lbs) ethnic Japanese.



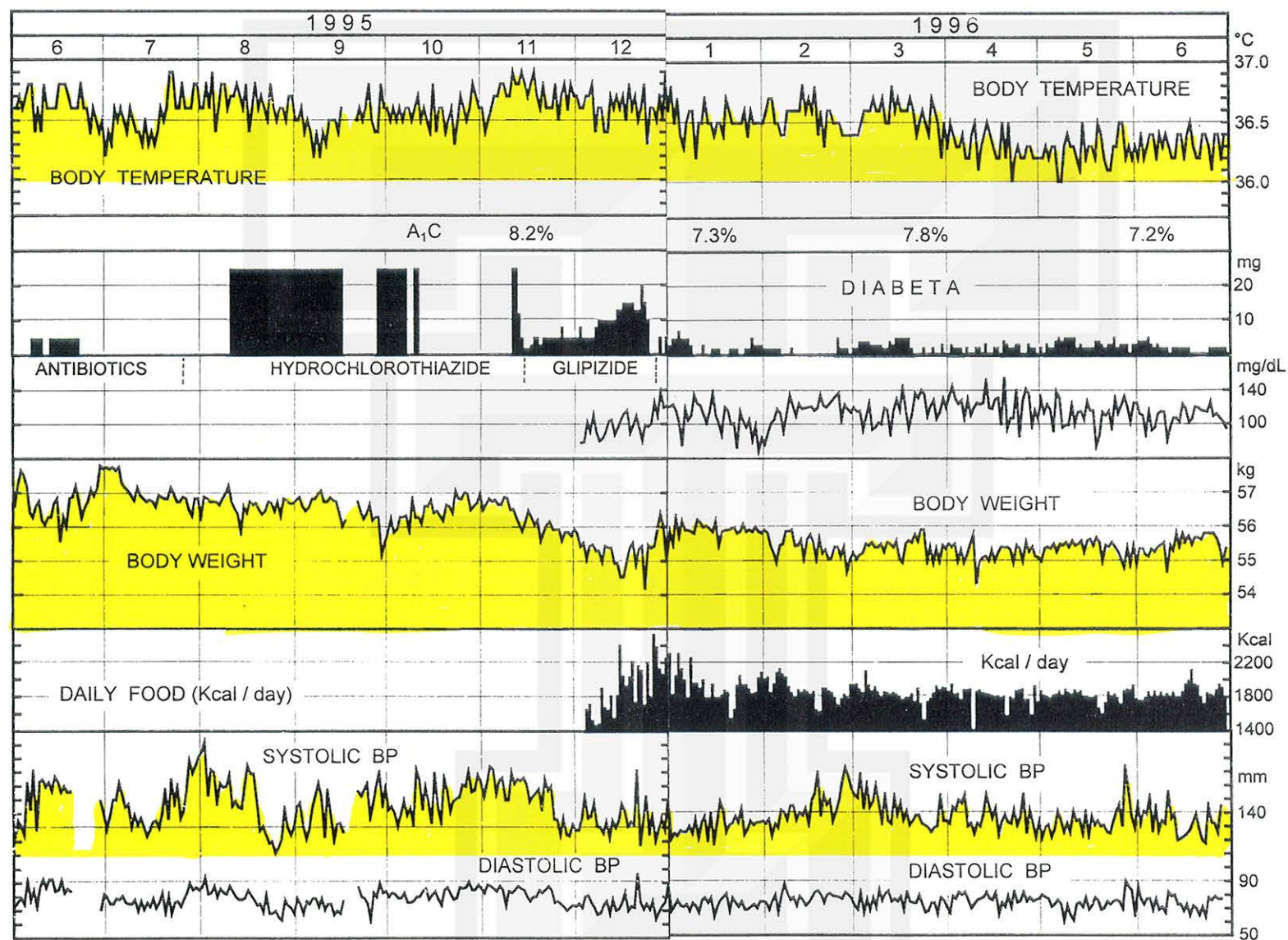


Fig. 2.11 Enlarged time scale for the period June through December 1995. Enlarged time scale for the period December 1995 through June 1996.

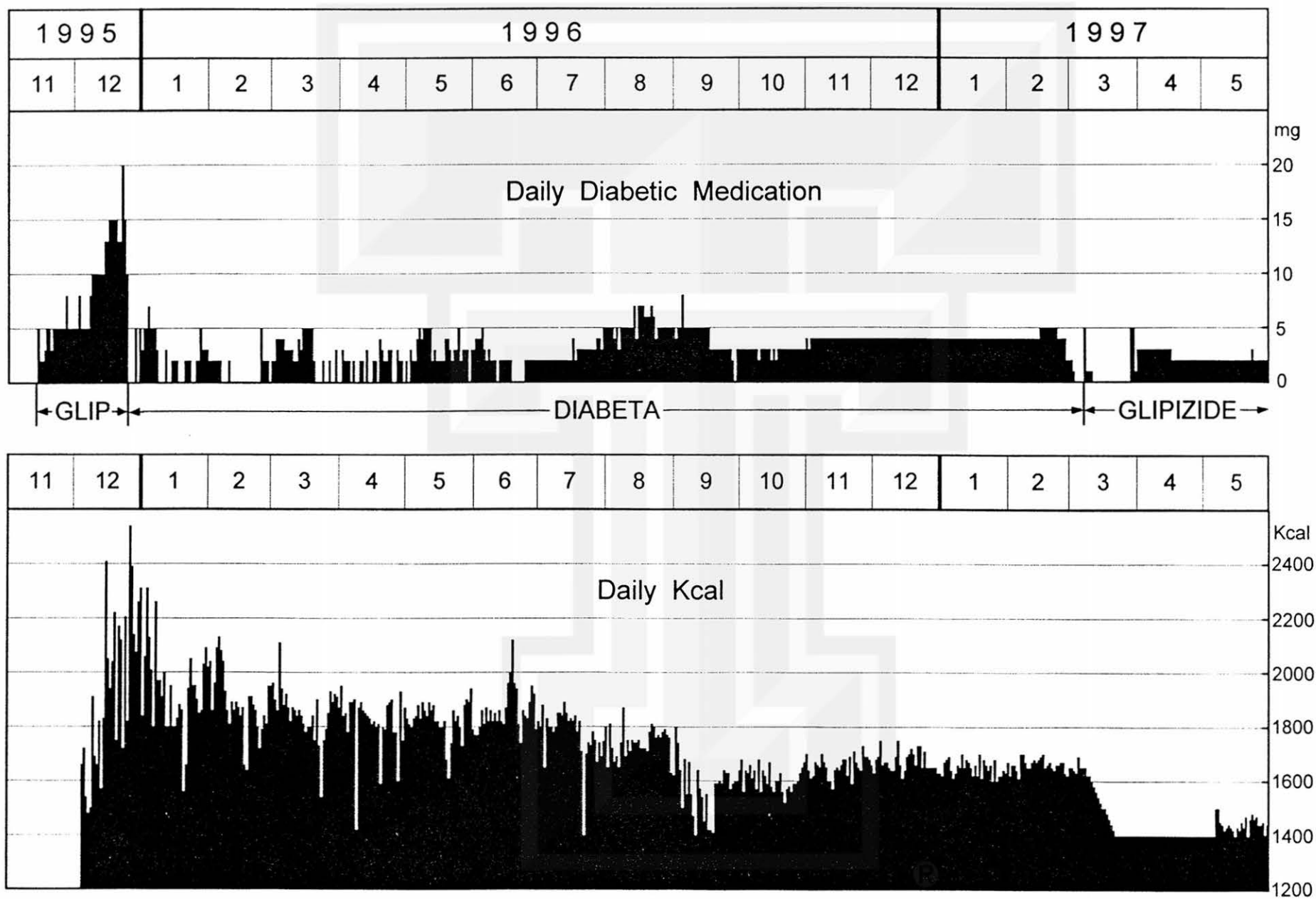


Fig. D (Ref. 2dd)

3. Onset and Increase of My Foot Pain

After 14 November 1995, the day of my diagnosed diabetes, I walked around the campus or exercised moderately, depending on the outdoor temperature (Fig. E). On 17 August 1996, my walking difficulty occurred without warning due to severe pain. It was unexpected indeed.

Although my wife and I were shocked and surprised, we had no doubt in our mind that the pain would be cured by doctors before too long. We visited specialized doctors at the University of Chicago Hospitals one after another.

My sketches of the pain areas on August 20, 1996 and November 20 reveal the increase in the area and scale of the pain (Fig. F). We took flash pictures of my feet on 19 March 1997, confirming that the coloration of the pain areas was normal and remained unchanged. Because the appearance of the skin is so close to normal, we have been wondering of the reason why I have been suffering from intolerable pain for such a long time (Figs. G and H).



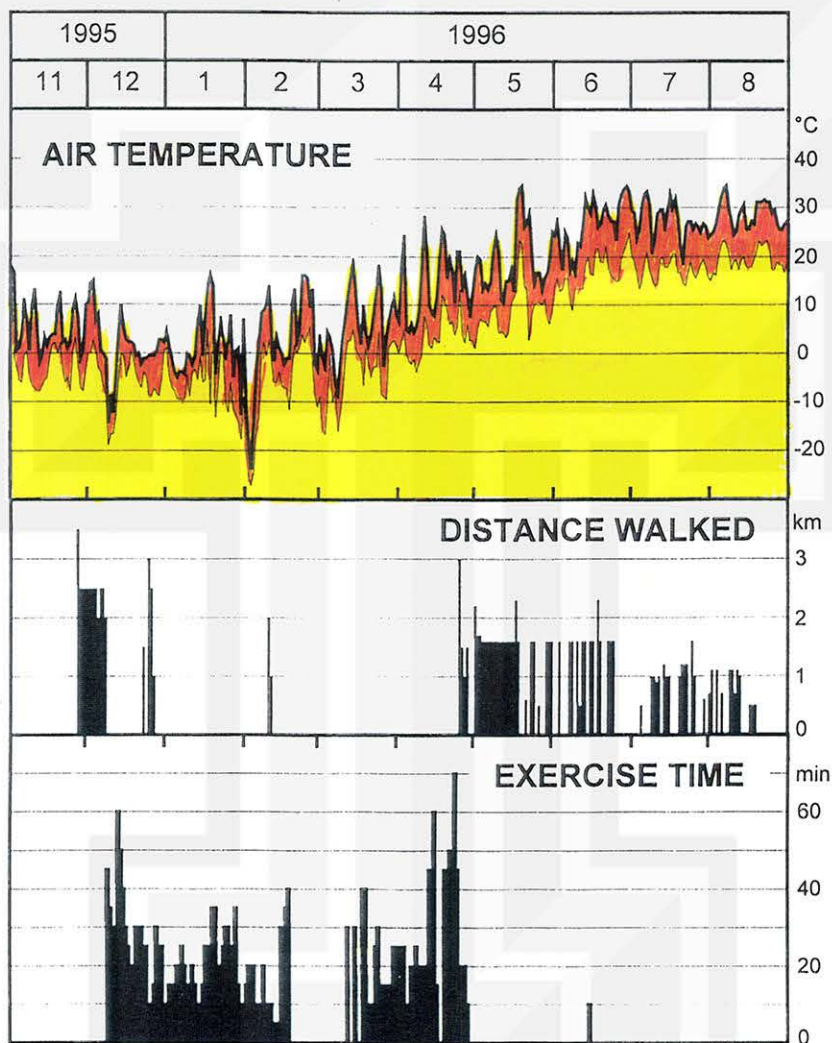


Fig. 3.3 Daily air temperature, maximum temperature in bold and minimum, in thin lines, total distance I walked daily, and daily exercise time.

3. 3図 シカゴの最高と最低温度（上）毎日歩行した距離（中）と毎日体操した時間（下）。11月と12月の往復歩行の後、親指の爪が変色していた。

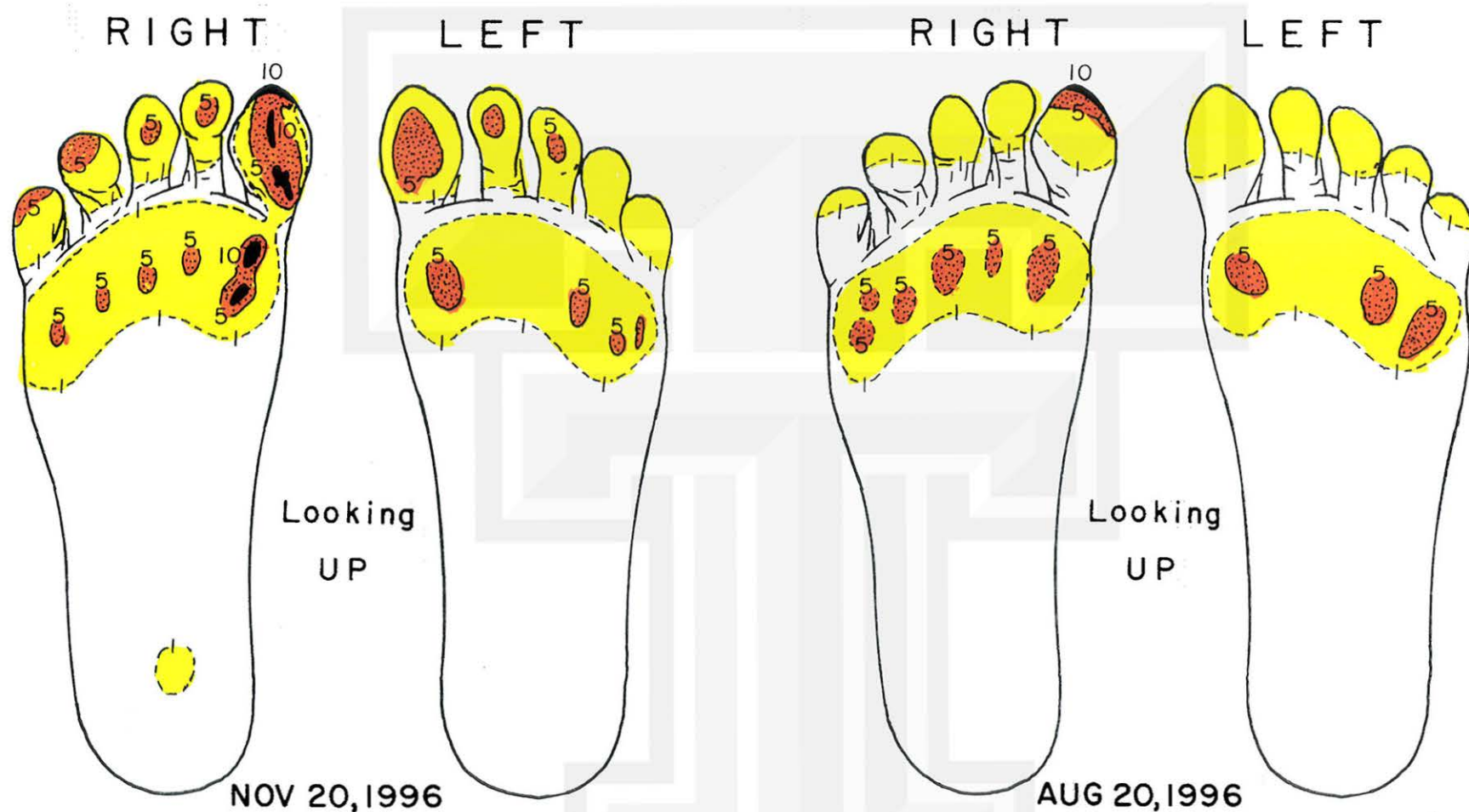
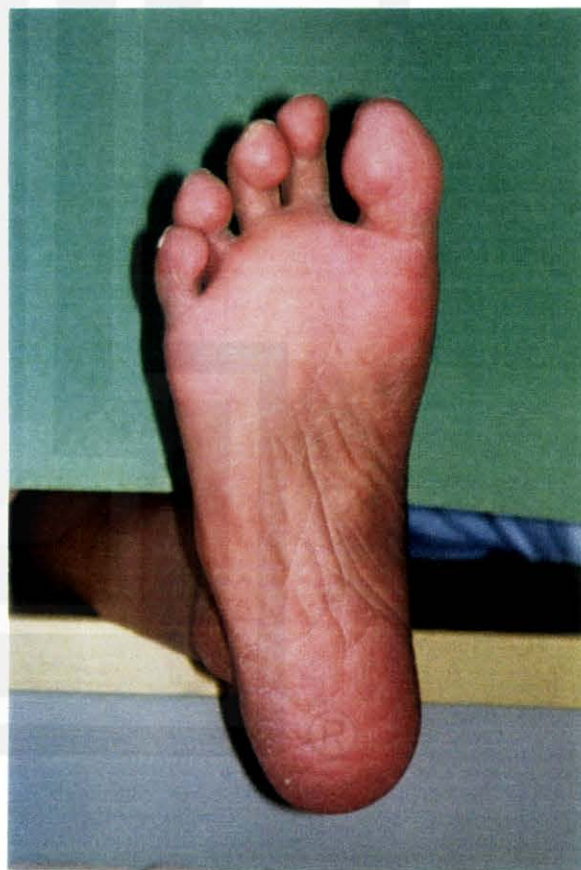
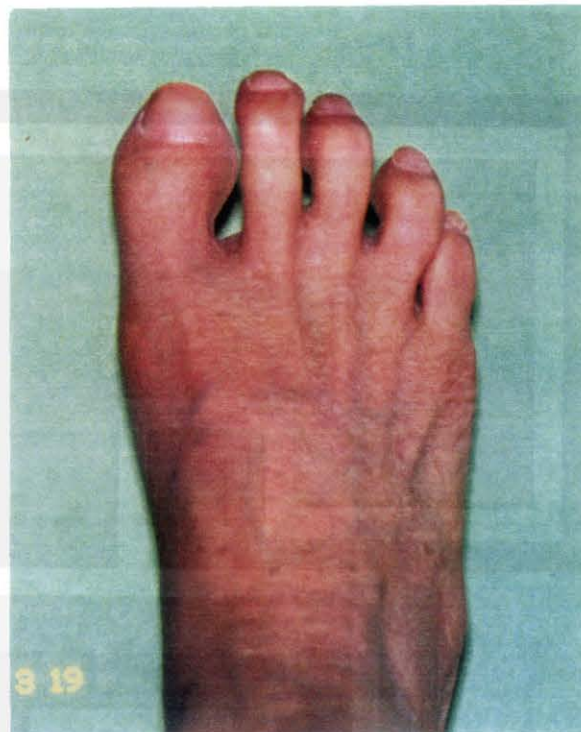
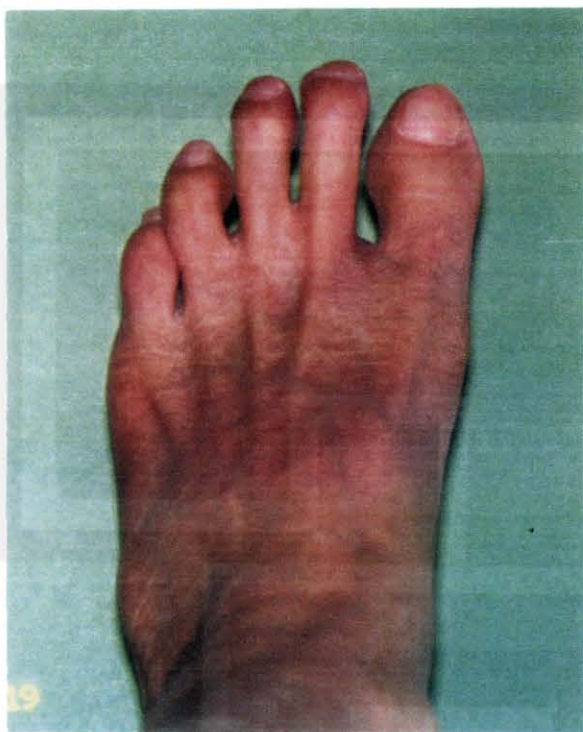


Fig. 3.5 Pain spots on my feet, which increased and leveled off during the three month period since Fig. 3.1 I learned that the overall pain will decrease after reaching a peak.

3. 5図 歩行困難になった3ヶ月後の11月20日にスケッチした痛む場所。場所は広がり、痛さも強くなったが、12月になってから、痛みは少しずつ弱まっている。春がくれば、暖かさと共にかなりよくなるだろうと期待している。

Fig. 3.1 Pain spots on my feet which I mapped on August 20, 1996, three days after the onset of my walking difficulties. 1 -weak pain, 5 -expected pain, and 10 -severe pain.

3. 1図 歩行困難になった3日後にスケッチした痛む場所。足の図は下から上を見上げて描き、痛みのスケールは、1 -弱い痛み、5 -並の痛み、10 -疼痛



Left Foot

Right Foot

Fig. H



**Right
Foot**



**Left
Foot**

4. Exploring the Cause of My Cold Feet

Early in October, I began reading various books describing the blood circulation in relation to diabetes. Every book suggested careful examination of feet daily whenever possible. It is because the peripheral blood circulation in the capillary blood vessels are often damaged by hyperglycemia.

Using my homemade thermometer I measured the skin temperature of my right leg (Fig. I). The temperature decreased markedly near the base of my foot. I assumed that my mild diabetes is now causing my cold feet, but not my leg.

Meanwhile, I computed the ratio of the blood pressure, both systolic and diastolic, measured on my hand and foot. The purpose is to determine myself if I have Arteriosclerosis of legs, or not. The results (Fig. J) computed from the August 1996 to February 1997 data are encouraging, however, my right leg showed approximately 10% lower in ratios. According to the Japanese definition, these ratios are still near normal. I know that my right-side foot is slightly more painful than my left-side foot.

I also checked my medical data to determine if some parameters show noticeable changes on or close to 17 August 1996, the first pain day when I was already experiencing very cold legs.

The vertical red lines drawn in Figs. K and L indicate the pain-start day. Please note that thin lines in these figures represent daily values and heavy lines, 10-day running means of the standard meteorological definition.

I do not find any meaningful variations in Fig. K except I began losing my weight after the first pain day. It is due to the loss of appetite and bad feeling. Both my body temperature and blood pressure remained steady.

Rather significant changes seen in Fig. L are (1) the V-shaped dip of the 6 a.m. fasting glucose and (2) the inverted-V-shaped peak of the Diabeta dosage caused by my intuitive increase of Diabeta to lower my glucose level after detecting a slight precursor of pain, three to four days in advance.

Assuming that diabetic pain decreases along with the better glucose control, I never expected the onset of the pain at the lowest time of my glucose. This is why I increased Diabeta by about 1.25 mg after detecting a slight precursor of pain several days in advance.



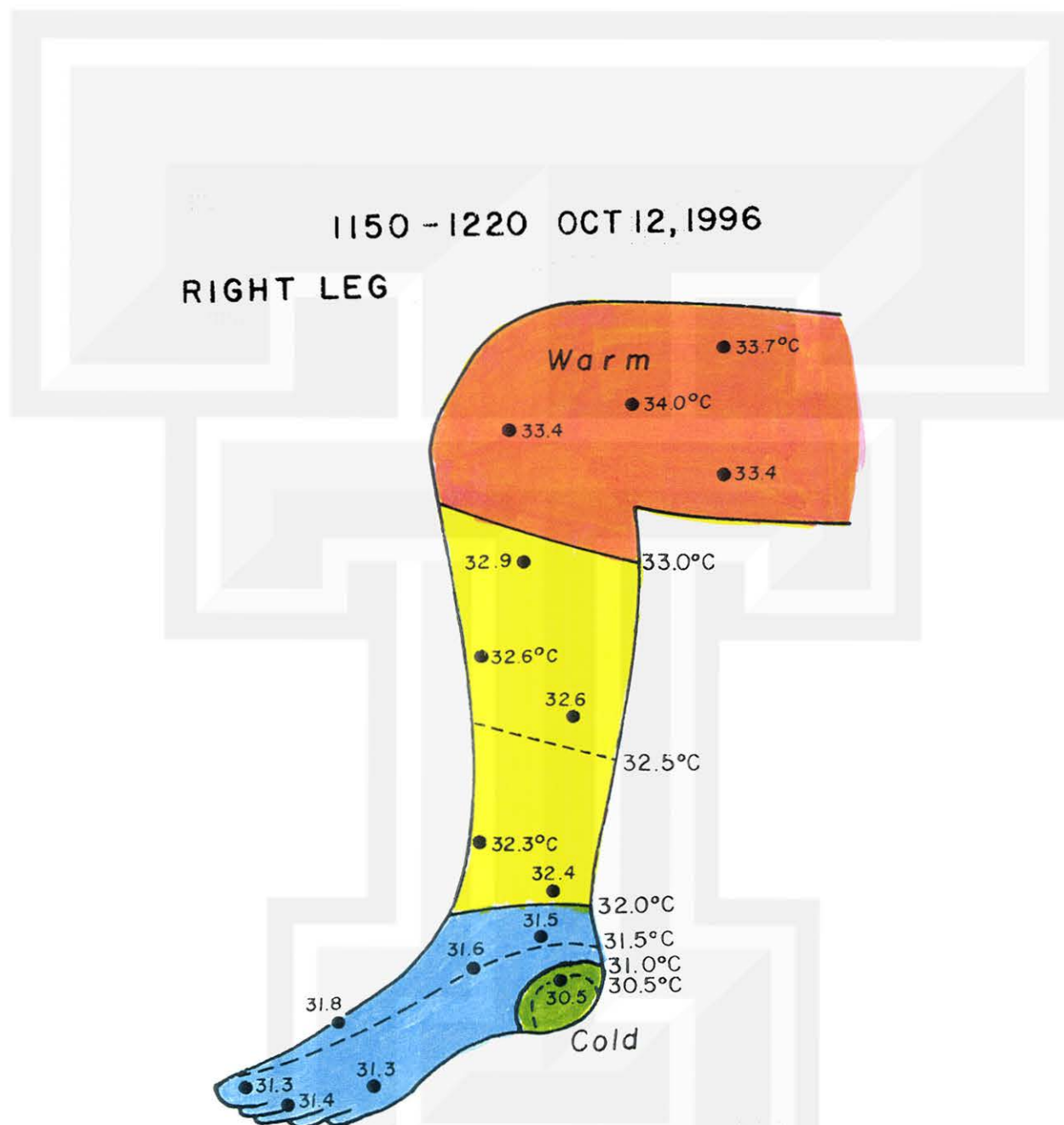


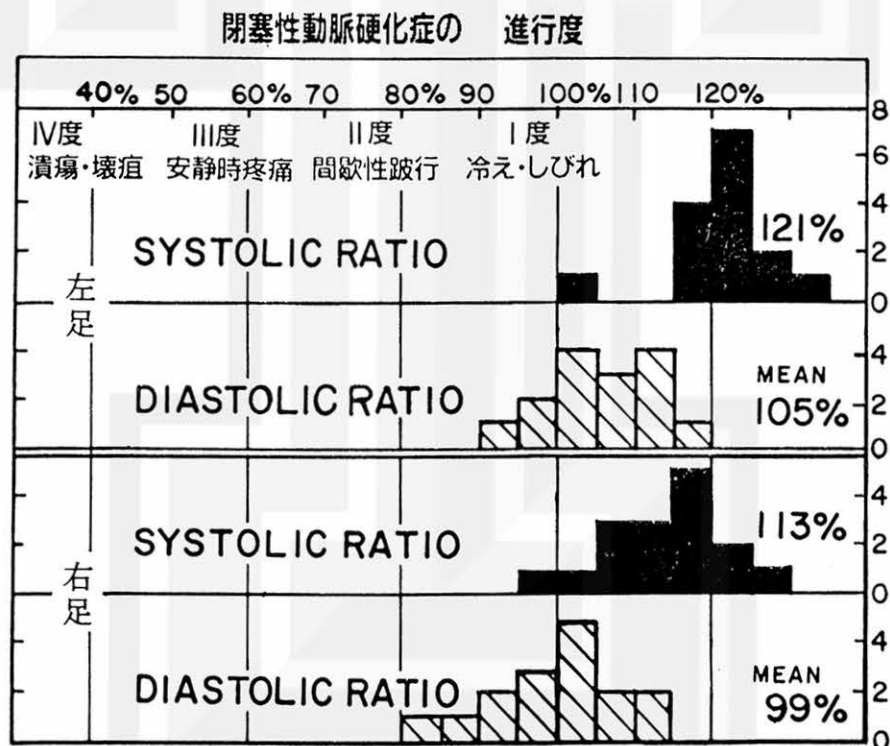
Fig. 3.2 Skin temperature of my right leg measured on October 12, 1996. A homemade thermometer with the 10°C to 40°C range was used for the measurements.

3. 2 図 私が作った温度計で測定した足の温度。足裏が冷く、踵の温度が最低だった。

I learned that the blood-pressure ratio of my leg and hand is a measure of **Arteriosclerosis**. Between Aug. '96 and Feb. '97, I computed the ratios of both legs, obtaining 60 systolic and diastolic ratios.

Presented herein are histograms of the ratios for every 5% increment. Although the mean ratios are within the normal range of 100 to 120%, the mean systolic ratio of my right leg is 8% lower than that of the left, whereas the diastolic ratio of my right leg is 6% lower than the left.

Is this why I have been feeling more pain on my right foot? Is diastolic ratio related to the returning blood flow in my feet?



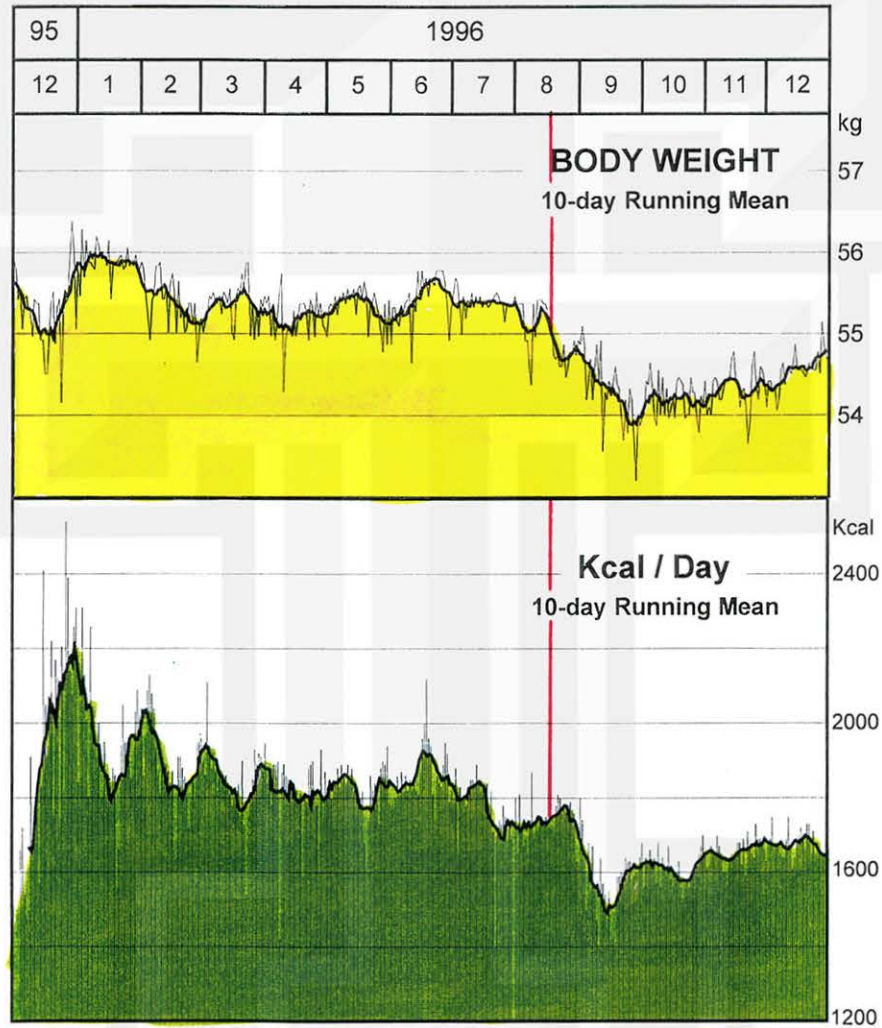


Fig. 2.15 10-day running means of my body weight at 6 a.m. and daily meals in Kcal/day. It is evident that the rate of increase in body weight is closely related to the daily Kcal/day.

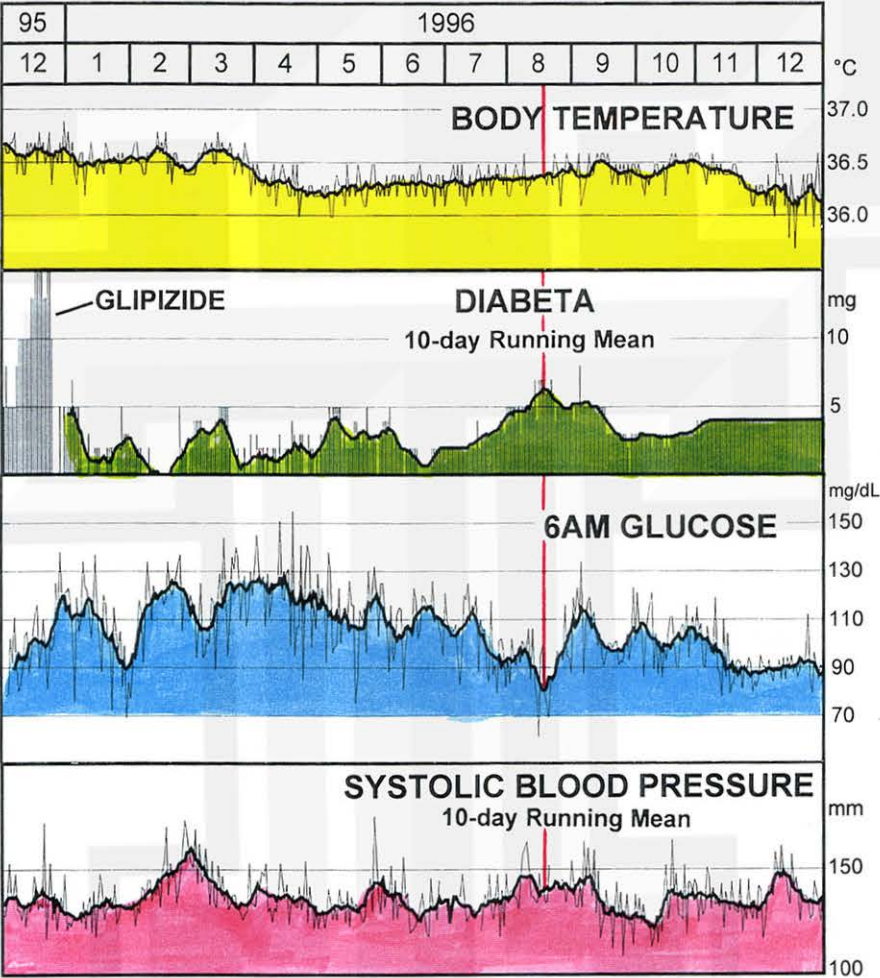


Fig. 2.17 10-day running mean of my 6 a.m. body temperature, daily diabeta medication, 6 a.m. fasting glucose, and systolic blood pressure

5. Doctors View of Unidentified Pain

On my 76th birthday, 23 October 1996, I was examined by a leading doctor of diabetes. After his examination, I asked a number of straightforward questions.

TF – Could you tell me the cause of my pain?

DR – Your feet are not causing pain, but your brain is feeling the pain.

TF – Why are my feet very cold? I showed him Fig. I (Ref. 10J).

DR – Your measured temperature is normal, but your brain is receiving the cold sensation.

While assuming that my pain could be unusual, I asked different questions.

TF – How often do you find patients with severe pain and walking difficulty like I have been suffering?

DR – How many tornadoes did you investigate?

TF – I investigated about 250 tornadoes. (I have the vivid memory of Fig. M (Ref. 8)

DR – I diagnosed about 300 patients just like you. (By courtesy, I did not ask him the statistical aspect of his patients, age, race, pain scale, survival rate, etc. I hope he publishes or already published the statistics.

The 300 patients in his answer imply that my pain is a garden-variety type. If so, I should recover before too long, because this doctor treated a large number of patients just like me.

Before leaving his office, I asked of his diagnosis of my pain. The diagnosis he wrote in my presence confused me somewhat, or greatly.

peripheral neuropathy
possibly due to diabetes

This diagnosis confirms that my pain is the disorder of peripheral nerve, but the cause of the disorder is possibly due to diabetes or something else.

40 days later on 3 December 1996 I received a diagnosis from another doctor stating, in effect, that I have diabetes mellitus with severe foot pain causing severely limited ambulation (Ref. 11dd).

My final examination on 20 May 1996 by the third doctor revealed that my pain is not caused by diabetes (Ref. 1dd). He also commented that there are pains, the cause of which have not been known to doctors.

These diagnoses since October 1996 are inconclusive, swinging between 0% to 100% contribution of diabetes. Nevertheless, my pain now exceeded scale 13 and increasing further with no end in sight. What shall I do now? This is my last question to doctors, professional and ethnic friends anywhere in the world.



2.5 Selected U.S. Tornadoes

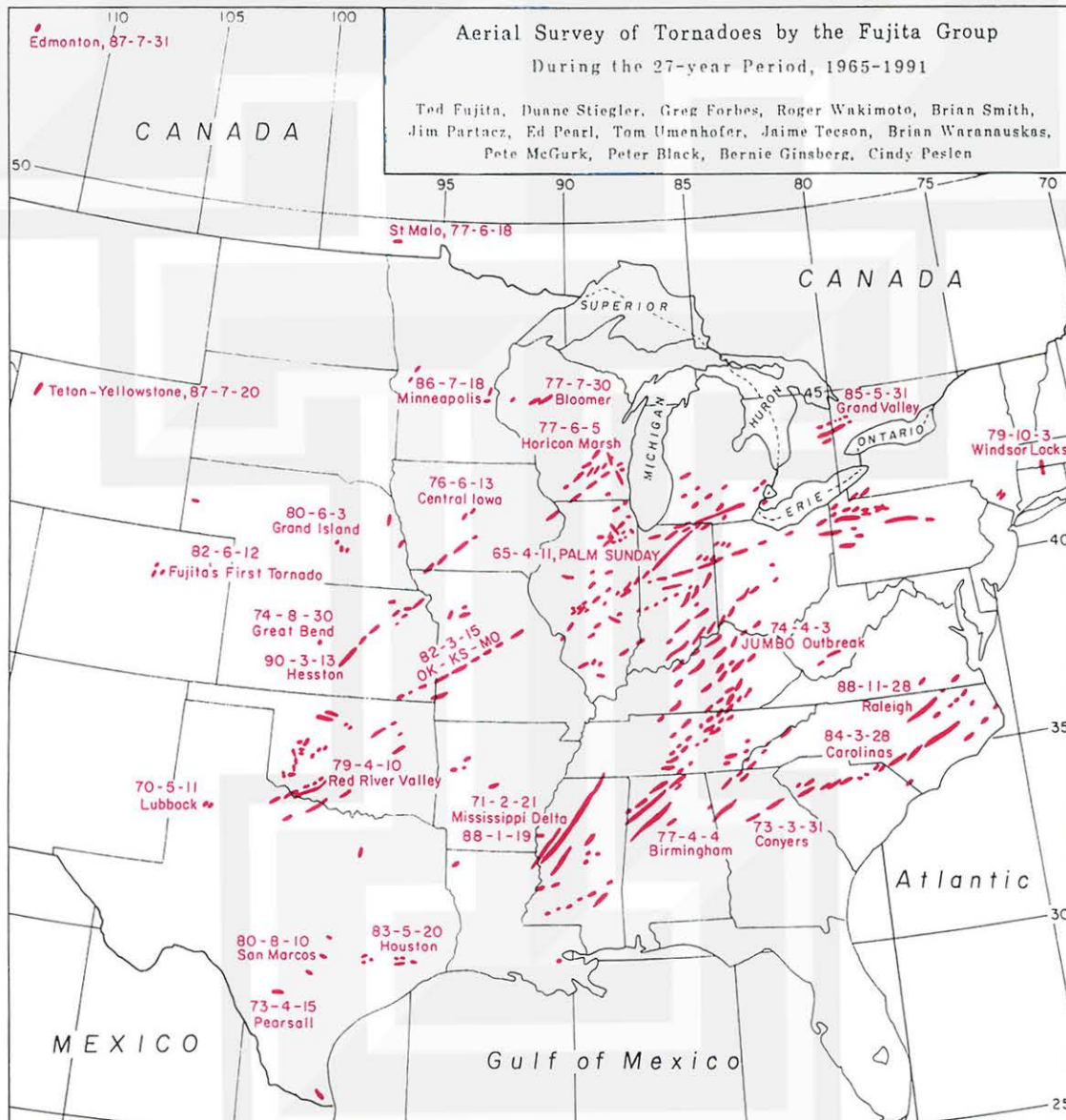


Fig. 2.5-1 Damage paths of tornadoes surveyed by the Fujita group mostly from low-flying Cessna aircraft. Over 300 damage swaths were flown over.

6. My Meteorology - Oriented Diagnosis

As of 13 June 1997, I have been suffering from intolerable scale-14 pain associated with very cold legs and feet. While writing this manuscript, I am wearing two pairs of trousers on top of a thick drawer. Furthermore, I am using a heating pad, feeling like cold-blooded homosapiens. I decided to complete this report, being encouraged by a large number of letters from my professional friends in both the United States and Japan. Three examples are shown in Figs. R,S, and T.

In an attempt to overview the history of my Diabeta dosage and pain, I produced a composite diagram of Diabeta dosage, fasting glucose, and pain (Fig. N). I suffered from shaky hands and uncomfortable feeling for about 6 months after changing oral agent from Glipizide to Diabeta. Since then unwanted cold legs began. I thought that the reduction of Diabeta dosage to below the 5 mg/day specified by doctor was causing cold legs. In July 1996, I increased the dosage gradually to 3.75 mg to 5 mg.

Before too long, the 6 a.m. fasting glucose decreased to 90, the lowest glucose level on 17 August when my foot pain and walking difficulty began. Thereafter, the pain increased steadily almost independent of the change in my glucose level. I was so desperate that I consulted with my diabetes doctor on my 75th birthday, 23 October 1996. Namely, I failed to correlate my pain with glucose or Diabeta dosage.

Because I have been experiencing that my cold legs and feet occur in advance of pain, I attempted to obtain multiple correlation's of foot pain, cold legs, and Diabeta dosage shown in Fig. N. Thereafter, I determined the

correlation's of Diabeta dosage vs. cold legs and cold legs vs. foot pain. As expected, the cold legs vs. foot pain correlation is very good. However, Diabeta dosage is not correlated to my cold legs.

On 23 March 1997, I obtained diurnal variation of the skin temperature of my leg at six locations (Fig. O), confirming that my leg temperature is near normal while I am sleeping while I am sleeping in bed. After I get up and leave my bed, the skin temperature decreases as much as 7°C at the base of the foot and 3°C at the knee. In view of the fact that I am controlling my leg temperature while sleeping in bed, and that I cannot control temperature while I am awake, I assume that my autonomic nerve could have been damaged by the chronic cold legs.

Under the assumption that the chronic cold legs are likely to occur due to chronic or integrated dosage of Diabeta pills with cumulative cold-leg days. Because I kept records of the dates of my cold-leg, I generated the new diagram of these cumulative values.

Cumulative hydrochlorothiazide dosage vs. cumulative cold-leg day diagram at lower left of Fig. P shows the delayed occurrence of cold leg with about one month delayed time lag in August 1995, the first month of HCTH. After taking $36+13+3 = 52$ days or cumulative 1290 mg total, cold feet ended approximately 2 months later.

Cumulative Diabeta dosage vs. cumulative cold-leg days showed more spectacular and long time lag. The first indication of daily cold-legs occurred at the end of May 1996, 5 months after started taking up to 5 mg Diabeta. My foot pain began 7 ½ months later, on the 40th cold-leg day on 17 August 1996. Since then I have been experiencing daily cold legs which has been becoming

worse along with the increasing pain. It is likely that my pain-inducing cold legs are highly correlated to the cumulative dosage of Diabeta.

SIDE EFFECTS REPORTED (Too late for me)

(Ref. 6) Physicians Desk Reference, 1997, pages 1265-66.

In initiating treatment for NIDDM, diet should be emphasized as the primary form of treatment. Those patients who may be more sensitive to hypoglycemic drug should be started at 1.25 mg daily.

My daily foods in Fig. D is excessive as well as the 5 mg Diabeta daily.

(Ref. 6) Also warnings on peripheral action of ADH. Allergic reactions --- arthralgia, myalgia, and vasculitis have been reported.

Although, I do not know the nature of my foot pain, possible side effects could have been avoided if I took 1.25 mg of Diabeta daily. Now, I am maintaining 55.7 kg (122.5 lbs) by taking only 1.25 mg/day equivalent of Diabeta with daily 1,450 Kcal foods.

My cold-leg sensation after hydrochlorthiazide could also be avoided if I ate banana to increase potassium. I heard from friends that they were instructed to eat bananas while taking HCTH. I feel sorry that mimicking diabetes with cold legs occurred due to the side effect of HCTH, without eating bananas.

Now I began to believe that every chemical agent could induce a side effect with specific probability as determined by the ethnic origin, specific gene, age, environment, and many other parameters. During my intolerable pain I heard from doctors, "This pill has no side effect", "You have to take this pill, otherwise", etc.

*To be continued...
and corrected
on Saturday, June 14*

Fig. N (Ref. 1dd)

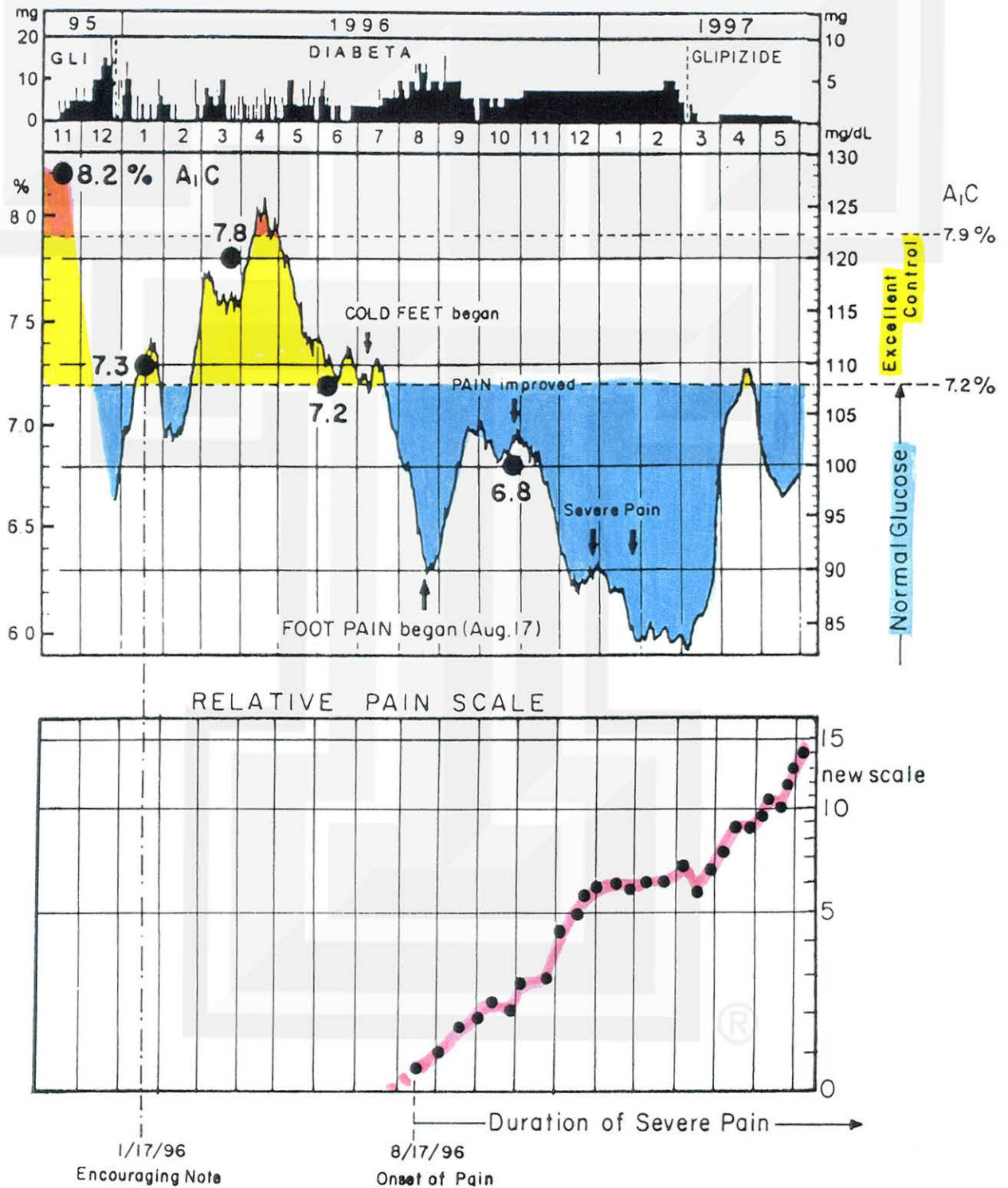
Composite Diagram showing my Pain in Relation to other Data

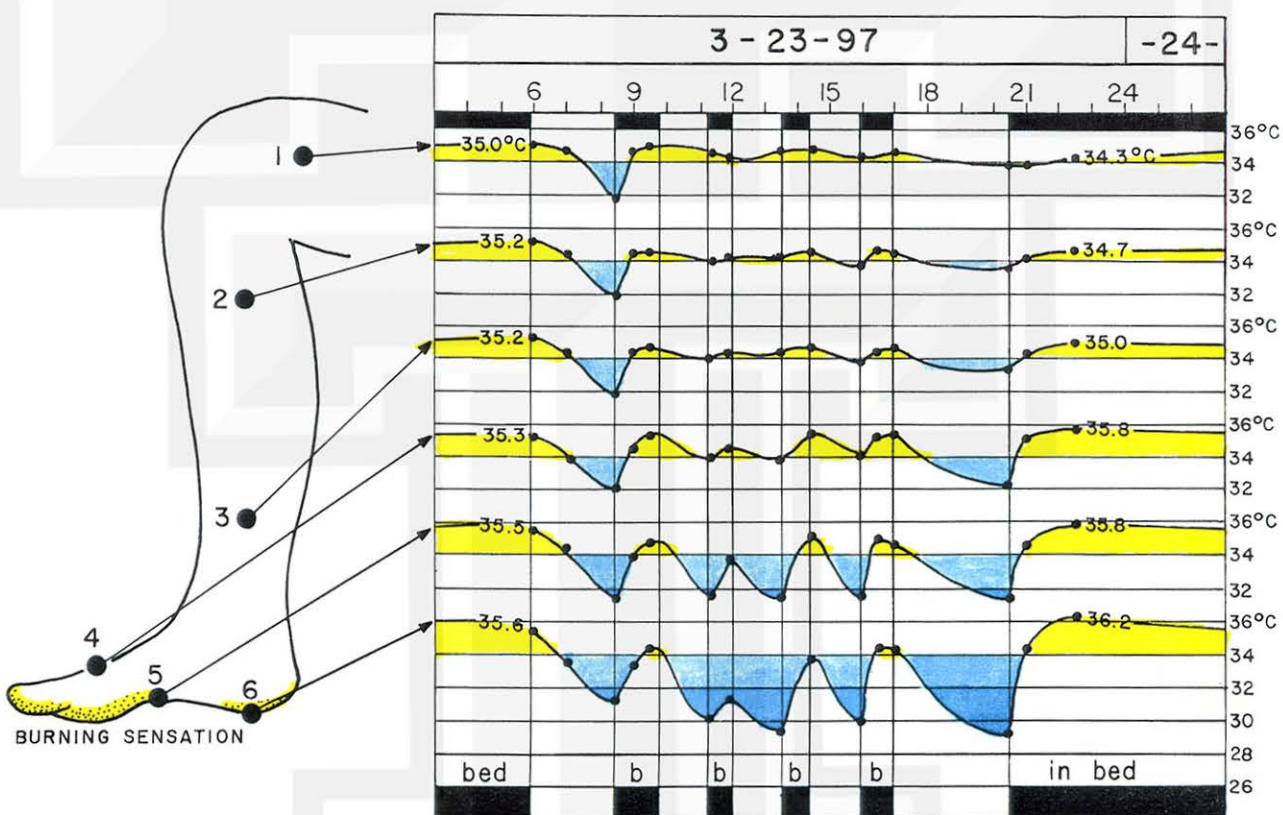
Top: Daily dosage of diabetic pills, Glipizide and Diabeta.

Middle: 30-day running means of daily fasting glucose at 6 a.m.
plotted at the ending date of averaging.

Black circles with A₁C were plotted at the data date.

Bottom: A linear increase of my pain since onset date, 8/17/96.





Diurnal variation of the skin temperature of my leg at six locations.

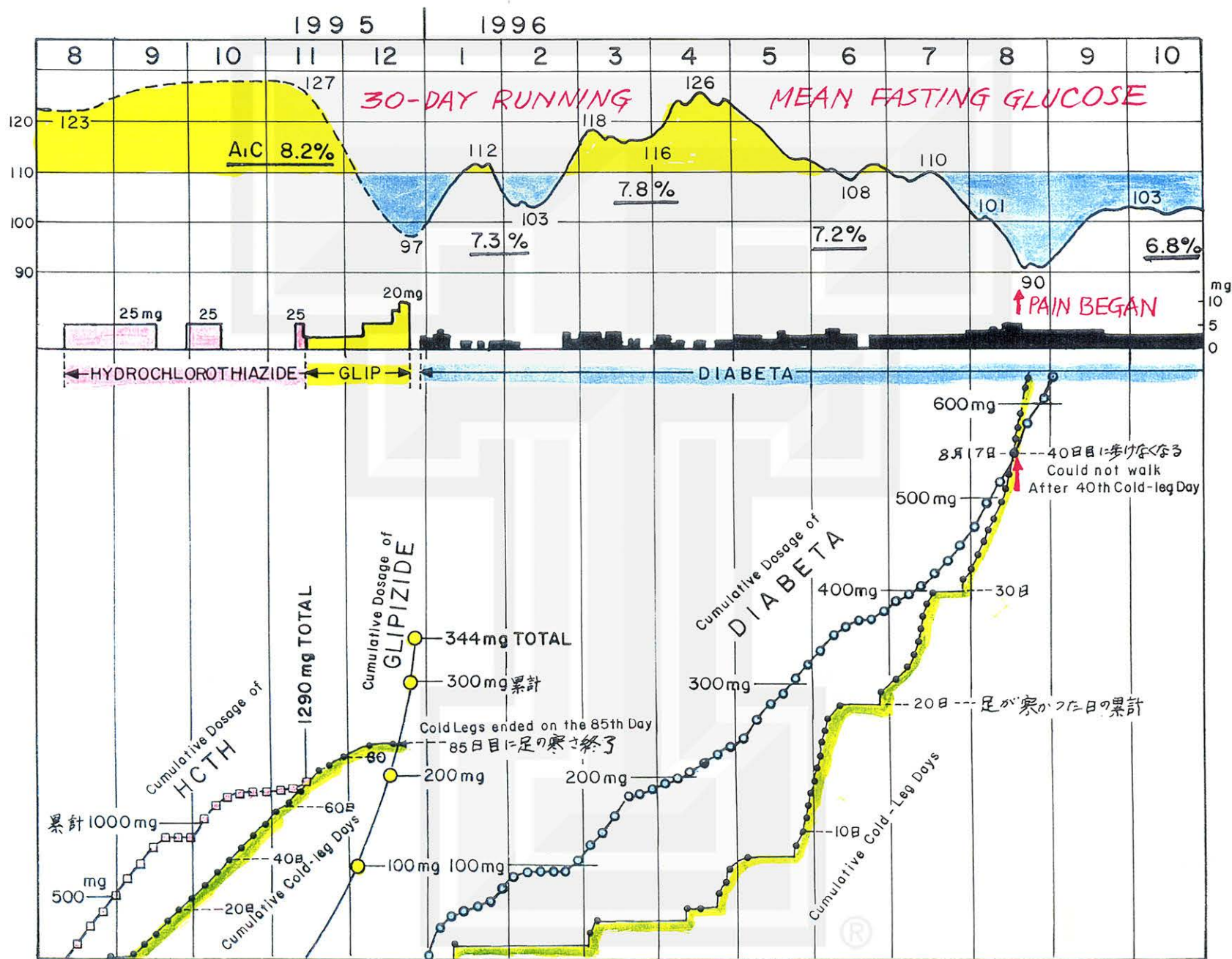


Fig. P

DIAGNOSES OF SEVERE PAIN ON MY FEET

Date	Pain	Diagnosis	Medication Recommended
11/14/95	no	A1C 8.2% mild diabetes (D.B.)	Glipizide 5-15mg
01/17/96	no	A1C 7.3% D.B. will not influence your health	Diabeta 5mg
08/17/96	1	First indication of pain on both feet	Diabeta 5mg continue
08/26/96	1	Metatarsalgia likely, no D.B. complication	None
08/29/96	1	Foot X-ray normal, Neuroma feet	Relafen 1000mg
09/19/96	2	A1C 7.2% upper limit of normal	Amitriptyline 10mg
10/23/96	3	A1C 6.8% normal blood glucose	none
10/25/96	3	Peripheral neuropathy possibly due to D.B.	Zostrix HP Ointment
12/03/96	5	Painful peripheral neuropathy due to D.B.	none
05/20/97	10	Severe pain is not diabetic origin	Tegretol
05/26/97	12	Pain increased close to intolerable limit	stay often in bed

FUJITA PAIN SCALE

- 1 Painful while walking (F1 tornado equivalent)
- 2 Need wheel chair; cold feet
- 3 Hard to walk; very cold feet (F2 tornado)
- 4 Hard to walk with cold and/or burning sensation
- 5 Very painful; able to walk up to 50ft (F3 tornado)
- 10 Hard to tolerate due to severe pain (F4 tornado)
- 10+ Incredible pain (F5 tornado); Only 1 to 5 per year in U.S.
- 10++ Inconceivable tornado (F6 tornado equivalent); only one report so far.
- 10+++Unknown domain of my pain (F7+ tornado) Does not exist on the earth.

*****This table is for meteorologist friends.

Fujita Tornado Scale used in U.S., Canada, Japan, China, etc.

Scale	Windspeed in m/s	Windspeed in mph	Expected Damage
F - 0	18 - 32	40 - 72	Light damage
F - 1	33 - 50	73 - 112	Moderate damage
F - 2	51 - 70	113 - 157	Considerable damage
F - 3	71 - 92	158 - 206	Severe damage
F - 4	93 - 116	207 - 260	Devastating damage
F - 5	117 - 142	261 - 318	Incredible damage
F - 6	143 - 170 m/s	319 - 380 mph	Inconceivable damage



NATIONAL SCIENCE FOUNDATION
4201 Wilson Boulevard
Arlington, VA 22230

DIVISION OF ATMOSPHERIC SCIENCES

Lower Atmospheric Research Section

March 28, 1997

Professor Ted Fujita
Department of Geophysical Sciences
The University of Chicago
Chicago, Illinois 60637

Dear Ted:

Thanks so much for sending me a copy of your book, "Late years of a Meteorologist", second addendum to "The Mystery of Severe Storms", March 1997.

I certainly enjoyed the photographs and the text in English though I am disappointed to learn that you have developed diabetes and find it difficult to walk though, I infer, you are improving. Your habits of mind as a meteorologist as applied to your medical data (Chapter Two), are truly remarkable. I do not think I know of another person, meteorologist or otherwise, who could confront his medical symptoms with such rational candor. But, then, perhaps that is one way of dealing with a discouraging reality. On the other hand, you have always treated "data" in meteorology in imaginative ways and revealed relationships the rest of us failed to see or appreciate but it is still surprising to me that you apply the same habits of mind to your own medical data. In short, I salute your courage.

I like the picture of you and ^{Sumiko}~~Seikyo~~ on page 38; it reminds me of the quiet elegance of the Kimono and the somewhat awkward grace of western dress. Also, are you depicted (upper right) in the photo on page 127? And why is the gentleman in the middle (seated) wearing a western hat? And who are the rest of these folks? They all have such beautiful faces, particularly the women.

Best personal wishes,



Ronald S. Taylor
Program Director
Physical Meteorology Program

気象学の発展と航空機運航

日本航空運航部長

(B767型機機長) 根本 英雄

1. 運航と気象情報

パイロットの業務（＝航空機操縦）と気象とは切ってもきれない関係にある。パイロットは飛行前に気象庁や国外では当該国の気象機関から提供された気象資料を念入りにチェックしてから航空機に乗り込むが、これはそれが航空法で要求されている手順であるからではなく、大気現象が実際に運航に大きな直接影響を与えるので特に念入りにチェックが行われている。

私共の様な航空業務に従事する者が利用する気象情報は、例えば、地上気象実況、高層風実況、レーダー情報、予・警報等、そのどれ一つを採り上げてみても、何れも今日迄の気象学の成果の積み重ねがあって初めて手にする事が出来る情報が殆どである。即ち、気象学の先達や気象関係者のご努力により今日の高品質の気象サービスを我々は受ける事が出来る様になったと認識している。この機会に改めて関係者に敬意を表し深く感謝したい。

3. 気象学の進歩による航空機運航の安全性向上

さて次に、私共パイロットが気象学ご研究の皆様特に感謝している点が幾つかあるので、それについて触れたい。

雨の中を進入着陸中の航空機に発生する事故は1970年代の半ば迄は、その殆どが「パイロットミス」の一言で片付けられていた。然し、それらは その後の気象学の進歩と一人の洞察力に優れた気象学者のお陰で真の原因が明らかにされる事になった。即ち、パイロットの「濡れ衣」が晴らされることになった。「濡れ衣」を晴らしてくれたのはシカゴ大学藤田哲也教授であった。

パイロットや航空関係者が藤田教授に感謝しているもう一つの理由は、藤田教授が気象学の領域に留まらず操縦の領域やパイロットの立場にも関心を寄せられ、パイロットが操縦室内でマイクロバーストを見つける為の手懸りを気象学者の立場から示しておられるからである。藤田教授は例えば以下の法則を示しておられる。

The speed increase in front of a shower means "Microburst"

ここには、航空機の進行方向にマイクロバーストが発生した際に操縦室内に現出する典型的変化の一つが示されており、これはパイロットにとっては明快でわかり易い Rule of Thumbの一例であると言う事が出来よう。

この様にパイロットが操縦室で手に出来る現象等を気象学の体系で解釈・翻訳し事故防止に活かす、と言う考え方と研究の実践を私どもパイロットを始め航空関係者は切望している。

処で国内に目を移すと、低高度ウィンドシヤー対策の重要な柱の一つとして、日本の気候風土に適合した空港気象ドップラーレーダーが関係者のご尽力により開発・導入されている。今回導入された空港気象ドップラーレーダーは航空安全に寄与する処が極めて大きいと考えられ、運航に関係する者の一人として、その導入に携わった関係の皆様心より感謝申し上げたい。

シカゴ大学
名誉教授
藤田哲也様

Fig. T (Ref. 12)

前略

昨日 Federal Express にて、お手紙並びに資料等を拝受いたしました。あまりにurgent な内容で、驚いております。そして、あまり希望を持っておられないと言うことに胸が痛みます。先生は日本に来て治療をするお気持ちはないのでしょうか？このまま、痛みの原因もはっきりせず、治療の方法も確立しないままに経過していくのは何とも残念に思います。

不思議なのは、お休みになるときは痛みが消えるということです。身体を水平にして足の位置が相対的に高くなると痛みが消えるのでしょうか。それとも薬などで痛みを止めてお休みになっておられるのでしょうか？

優秀なお弟子さんが、研究の方は引き継いで下さるにしても、何とか日本に來られて、今一度回復をするための試みをしていただけないものでしょうか。心臓移植などの目的で渡米する重病人もいるのですから、先生も日本に來られないことはないのではありませんか？どうか諦められずに、回復の試みをされることを心から願っております。

それでは、取り急ぎお手紙へのお返事まで。

草々

高谷美正

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追伸：テレビ朝日の取材については、先生のお書きになった The Mystery of Severe Storms と、National Geographics のビデオテープを貸してあります。