Experimental

DEFICIENT/EXCESSIVE PATTERNS FOUND IN MERIDIAN FUNCTIONING IN CASES OF LIVER DISEASE

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ABSTRACT

The aim of this study is to investigate whether characteristic patterns of deficiency or excess of Ki energy exist in the Before Polarization (BP) values of the respective meridians measured with the AMI (Apparatus for measuring the Meridian functioning and their corresponding Internal organs) in cases of liver disease.

The examinations of deficiency/excessive patterns of each meridian clearly indicated the correlation with each case of liver disease, and seem to be clinically applicable. Two values, raw value and standardized value, are calculated for the BP values at each "well" point. The raw values seem to be more relevant for clinical diagnosis than the standardized value examinations. However, in serious cases of liver disease (liver failure and cancer), the frequency for deficiency is highest in the liver meridian according to the standardized value examination. Therefore, it is desirable to make diagnoses based on the excessive/deficient patterns of raw values in each case of liver disease, referring to standardized values.

KEYWORDS: AMI, acupuncture, meridians, liver diseases

INTRODUCTION

The AMI (Aparatus for Measuring the Meridian functioning and their corresponding Internal organs) is an instrument designed specially for studying the subtle energy functions in the Acupuncture meridians. The subtle energy flowing in the meridians is termed Ki (or Chi, in the Chinese literature) and a measure of the energy flow is obtained through the application of a small voltage at the "well" or the terminal point of the meridians in the extremities (details are described below). Earlier experiments have shown the AMI can follow the changes in Ki in the meridians through the changes in the current flowing in the system.[1]

Liver diseases are prevalent in major sections of the population in most countries of the world due to inappropriate life style, improper diet and even due to iatrogenesis. Detection and treatment of liver disease is difficult and expensive. The following study tries to answer the question if the AMI could be used for screening patients with suspected liver disorders.

OBJECTIVES OF THE STUDY

To investigate whether characteristic patterns of deficiency or excess of Ki energy exist in the Before Polarization(BP) values of the respective meridians measured with the AMI in cases of liver disease.

If characteristic deficient/excessive patterns of Ki energy exist in cases of liver disease, it seems possible to diagnose or foresee the condition of the liver disease based on the AMI data.

MODERN MEDICAL DIAGNOSES OF LIVER DISEASE CASES AND AMI DATA

Under the supervision of Ishikawa, President of Tokyo Dental College, Ebihara diagnosed liver disease patients, and Takahashi measured their meridian functioning with the AMI and collected AMI data at Ichikawa General Hospital

Table I
Number of Patients with Liver Diseases and AMI Measurement Dates

Modern Medical Diagnoses	Number of Patients	Dates of AMI Measurements
Fatty liver	9	March—April, 1994
Hepatitis (acute & chronic)	19	March—April, 1994
Cirrhosis of liver	8	March—April, 1994
Liver failure & cancer	16	Feb—April, 1994

of Tokyo Dental College.[2-4] The data were examined and the results were presented at a medical conference.[5] The authors further examined their data for the aforementioned objectives with their permission, and made statistical analyses. Table I gives the number of patients and the AMI measurement dates.

STATISTICAL ANALYSES OF AMI DATA

In the AMI measurements, single rectangular wave pulses of 3 volts DC of duration of 2 millisecond are sequentially applied to 28 "well" points of each patient.[6] Upon application of this external electrical potential, an initial current flows in the dermal connective tissues in units of nanoseconds (10^{-9} seconds). This initial current is called the BP (Before Polarization) current. Immediately after the external application of a rectangular electrical pulse of 3 volts DC, the capacitive component within the basal membrane of the epidermis is charged at around 200 microamperes/sec, and the current is then unable to flow into the dermis because of the reverse-polarization generated there. As the initial current is the current that flows before formation of the reverse polarization at the epidermal basal membrane, it is called the BP (Before Polarization) current.

Motoyama and Harada has provided evidence that this BP current is the current flowing along the meridians in the dermal connective tissue and is related to the Ki energy. The current that flows in the epidermis after the formation of the reverse polarization is identical to GSR, the parameter of sympathetic nervous function, and is called the AP (After Polarization) current.[5]

The raw BP values (non-standardized raw values) measured at the sites of 28 "well" points (right-left well points of 14 meridians) for each patient are ranked in order from the highest to the lowest values.[6,7] In this experiment, the meridians with the three highest BP values were considered as excessive (Ki energy excess), and the meridians with the lowest BP values as deficient (Ki energy deficiency).

The frequencies of occurrence of excess and deficiency were calculated for each case of liver disease, and χ^2 tests were performed to investigate whether the frequency distribution of excess or deficiency occurred by chance or whether it has a correlation with each case of liver disease.

For cases in which χ^2 tests showed "a significant correlation," an analysis was made on deficient and excessive meridians, and these deficient/excessive patterns were examined for each case of liver disease. Based on the aforementioned statistical analyses and on the meridian functioning and relationships between meridians (such as the Yin-Yang and Three Yin-Three Yang relationships) that have been verified through our long-term research based on AMI data,[8] the following observations were made.

OBSERVATIONS

Raw AMI Data Patterns Found in Liver Diseases

The frequencies of the 3 most deficient meridians (i.e., meridians with the three lowest BP values) and the 3 most excessive meridians (i.e., meridians with the three highest BP values) for each case of liver disease are shown in Tables II, IV, VI and VIII are based on the AMI raw data. χ^2 tests were then performed to examine whether the frequency distribution occurred by chance or was significantly related with each case of liver disease. These results are shown in Tables III, V, VII, and IX.

Table II
Fatty Liver—Number of Patients: 9

		Raw values	
	Meridians	D.F.	E.F.
1	LU	1	5 (19%)
2	LI	1	0
3	ST	2	1
4	SP	1	4 (15%)
5	HT	0	0
6	SI	5 (19%)	0
7	UB	2	0
8	KI	2	4 (15%)
9	HC	5 (19%)	0
10	TH	2	0
11	GB	0	0
12	LV	0	0
13	DI	4 (15%)	4 (15%)
14	SB	2	9 (33%)
	Sum	27	27

Note: Deficient Frequencies (DF), Excessive Frequencies (EF)
Percentages were calculated by dividing the frequency of each meridian by the sum of deficient frequencies or excessive frequencies.

Table III
x^2 Tests Results (Fatty Liver)

Raw Values	Deficient frequencies	Excessive frequencies
P = 0.05	22.362	22.362
Degree of freedom	13	13
Number examined	14	14
x^2	19.148	53.370

Fatty Liver

Table II shows that the frequency for excess is 9 for the stomach branch (SB) meridian, 5 for the lung (LU) meridian, and 4 for the spleen (SP), kidney (KI) and diaphragm (DI) meridians. The stomach branch meridian is

Table IV
Hepatitis—Number of Patients: 19

		Raw values	
	Meridians	D.F.	E.F.
1	LU	0	10 (18%)
2	LI	6	0
3	ST	1	2
4	SP	0	18 (32%)
5	HT	3	1
6	SI	7 (12%)	0
7	UB	6 (11%)	3
8	KI	1	4
9	HC	11 (19%)	0
10	TH	9 (16%)	0
11	GB	4	0
12	LV	0	17 (30%)
13	DI	5 (9%)	0
14	SB	4 (7%)	2
	Sum	57	57

Note: Deficient Frequencies (DF), Excessive Frequencies (EF)
Percentages were calculated by dividing the frequency of each meridian by the sum of deficient frequencies or excessive frequencies.

Table V
x^2 Tests Results (Hepatitis)

Raw Values	**Deficient frequencies**	**Excessive frequencies**
P = 0.05	22.362	22.362
Degree of freedom	13	13
Number examined	14	14
x^2	39.035	126.473

traditionally and clinically considered to be related with the stomach meridian, but is also considered as a branch of the liver meridian. It is known that the stomach branch meridian shows excessive functioning or deficient functioning at the time of liver disease. The stomach branch, spleen and diaphragm

Table VI
Cirrhosis of Liver—Number of Patients: 8

		Raw values	
	Meridians	D.F.	E.F.
1	LU	0	5 (21%)
2	LI	3	1
3	ST	2	0
4	SP	0	7 (29%)
5	HT	0	1
6	SI	3	0
7	UB	4 (17%)	0
8	KI	0	2
9	HC	5 (21%)	0
10	TH	1	0
11	GB	4 (17%)	1
12	LV	0	6 (25%)
13	DI	1	0
14	SB	1	1
	Sum	24	24

Table VII
χ^2 Tests Results (Cirrhosis of Liver)

Raw Values	Deficient frequencies	Excessive frequencies
P = 0.05	22.362	22.362
Degree of freedom	13	13
Number examined	14	14
χ^2	23.833	44.833

meridians are connected with digestive function. The lung and kidney meridian values are also excessive.

Table III shows the deficient frequency distribution is not at the level of 5% significance. However, the frequency distribution of the excessive meridians is $\chi^2 = 53.37$ ($p < .001$), which indicates that there is a correlation between fatty liver and the 3 most excessive meridians at very high significance level.

The above indicates fatty liver shows an excessive pattern in the BP values of the stomach branch, lung, spleen and diaphragm meridians. The deficient/

excessive pattern shows that the heart constrictor (HC) meridian is the most frequently deficient and the stomach branch (SB) meridian is the most frequently excessive.

Hepatitis

Table IV shows that the frequency for deficiency is 11 for the heart constrictor (HC) meridian, 9 for the triple heater (TH) meridian, 7 for the small intestine (SI) meridian, 6 for the urinary bladder (UB) meridian, 5 for the diaphragm (DI) meridian and 4 for the stomach branch (SB) meridian.

Table V shows that both the deficient and excessive frequency distributions are high at more than the 0.1% significance level, and it indicates there are significant correlations between hepatitis and the BP values of 14 meridians.

According to the traditional meridian theory, the heart constrictor meridian forms the Absolute Yin channel with the liver meridian.[5] The fact that the heart constrictor meridian showed deficiency but the liver meridian did not probably indicates that Ki energy was consumed in the liver meridian (which mainly flows in the lower half of the body) due to hepatitis and was not sufficiently supplied to the heart constrictor meridian (which mainly flows in the upper half of the body) in the Absolute Yin channel (energy transmission channel from the liver to the heart constrictor meridian).

The deficient pattern of hepatitis is shown in the descending order of the heart constrictor, triple heater, small intestine and urinary bladder meridians.

Table IV shows that the frequency for excess is 18 for the spleen (SP) meridian, 17 for the liver (LV) meridian and 10 for the lung (LU) meridian. This coincides with what was assumed above: Ki energy is consumed in the liver meridian, the partner which forms the Absolute Yin channel with the heart constrictor meridian (most frequently deficient), and it is not sufficiently supplied to the latter. In hepatitis, a large amount of Ki energy is consumed in the liver meridian (being second most frequently excessive) and Ki energy is deficient in the heart constrictor meridian, which is the partner of the liver

meridian, both forming the Absolute Yin channel. The spleen meridian, which is most frequently excessive, is one of the meridians that control the digestive system (including organic liver function) together with the liver meridian.

The excessive pattern of hepatitis is shown in spleen, liver and lung meridians. The deficient/excessive pattern of hepatitis is shown in the heart constrictor meridian (most frequently deficient), the spleen meridian (most frequency excessive) and liver meridian (second most frequently excessive).

Cirrhosis of Liver

Table VI shows deficiency is at 5 for the heart constrictor (HC) meridian, 4 for the gall bladder (GB) meridian and also 4 for the urinary bladder (UB) meridian, and that the excess is at 7 for the spleen (SP) meridian, 6 for the liver (LV) meridian and 5 for the lung (LU) meridian. It has been mentioned that the heart constrictor and liver meridians form the Absolute Yin channel. As seen in hepatitis, the pattern of deficiency of the heart constrictor meridian and excessiveness of the spleen and liver meridians was also observed in cirrhosis of liver.

Table VII shows that the deficient frequency distribution is at the 5% significance level and the excessive frequency distribution is at the 0.1% significance level, indicating significant correlation of BP values with cirrhosis of the liver.

Liver Failure & Cancer

Table VIII shows a different deficient/excessive pattern from those of fatty liver, hepatitis and cirrhosis of liver: the frequency for deficiency is 9 for the urinary bladder (UB) meridian, 6 for the gall bladder (GB) and stomach (ST) meridians and 5 for the triple heater (TH) meridian; and the frequency for excess is 14 for the lung (LU) meridian and 8 for the spleen (SP) meridian, and it is only 4 for the liver (LV) meridian.

Table IX shows that the deficient frequency distribution is at the 5% significance level and the excessive frequency distribution is at the 0.1% significance level, indicating significant correlations with liver failure and cancer.

Table VIII
Liver Failure & Cancer—Number of Patients: 16

		Raw values	
	Meridians	D.F.	E.F.
1	LU	0	14 (29%)
2	LI	2	3
3	ST	6 (13%)	1
4	SP	0	8 (17%)
5	HT	3	2
6	SI	4	1
7	UB	9 (19%)	1
8	KI	3	4
9	HC	2	4
10	TH	5 (10%)	0
11	GB	6 (13%)	1
12	LV	2	4 (8%)
13	DI	3	4
14	SB	3	1
	Sum total	48	48

Note: Deficient Frequencies (DF), Excessive Frequencies (EF) Percentages were calculated by dividing the frequency of each meridian by the sum of deficient frequencies or excessive frequencies.

Table IX
x^2 Tests Results (Liver Failure & Cancer)

Raw Values	Deficient frequencies	Excessive frequencies
P = 0.05	22.362	22.362
Degree of freedom	13	13
Number examined	14	14
x^2	22.583	51.75

According to traditional meridian theory, the urinary bladder meridian is said to distribute Ki energy to the cerebrum, cerebellum, limbic system, hypothalamus and brain stem, and to be the most cardinal meridian, sending Ki energy to each organ through each associated acupoint located on this meridian. The fact that the deficient frequency is highest in the urinary bladder meridian

indicates that the entire body is exhausted. In addition, the deficient frequency of the triple heater meridian (which controls the entire energy distribution) is also high at a value of 5. This indicates that the entire energy distribution in the body is deficient in liver failure and cancer.

As shown, the frequency for excess is 14 for the lung (LU) meridian and 8 for the spleen (SP) meridian. These two meridians form the Greater Yin channel, with the lung meridian mainly flowing in the upper half of the body and the spleen meridian mainly in the lower half.[5] It is traditionally said that Ki energy first manifests in the lung meridian and AMI measurements have indicated that the lung meridian is commonly the most excessive, overriding racial, gender and age differences.

The fact that the lung and spleen meridians are excessive and at the same time the urinary bladder and triple heater meridians, which distribute Ki energy to the entire body, are deficient, shows energy levels just prior to exhaustion, although Ki energy is relatively high in the lung and spleen meridians, where Ki energy distribution starts.

The deficient/excessive pattern for liver failure & cancer is summarized by the deficiency of the urinary bladder, stomach and gall bladder meridians and excess for the lung and spleen meridians.

In the next section, the data analysis is explained to show the entire Ki energy level is lower than the normal values in liver failure and cancer patients and higher than the normal in patients with mild cases such as fatty liver and hepatitis. These points may be of importance in detecting the illnesses.

Overall Ki Energy Level (Averaged BP Values) Found in Cases of Liver Disease

The averaged raw BP value (parameter of overall Ki energy level) was calculated for each case of liver disease, and presented in Table X to Table XIII. All data were taken between February and April in 1994.

The averaged BP value of fatty liver patients is 1552μA, that of hepatitis patients is 1605μA, that of cirrhosis of liver is 1567μA, and that of liver failure

Table X
Averaged BP Values (Fatty Liver)

Dates of measurement	Names	Individual averages
1994 03/25 00:13	1. Ryuzaki	1423.285
1994 03/25 00:43	2. Takahashi	1676.857
1994 04/08 15:51	3. M.O.	1661.4642
1994 04/08 16:14	4. H.W.	1803.857
1994 04/08 16:26	5. Koga	1299.321
1994 04/08 16:43	6. S.S.	1536.714
1994 04/08 16:56.	7. Ohata	1426.5
1994 03/07 15:39	8. Sano	1496.857
1994 03/10 18:53	9. S.S.	1641.142
Group Average		1552

Table XI
Averaged BP Values (Hepatitis)

Dates of measurement	Names	Individual averages
1994 03/03 15:57	1. T.K.	1639.142
1994 03/03 16:47	2. K.H.	1789.142
1994 03/14 18:56	3. K.K.	1372.571
1994 03/14 19:11	4. M.T.	1689.428
1994 03/28 18:38	5. H.I.	1587.142
1994 04/18 19:58	6. K.H.	1516.571
1994 03/03 18:45	7. C.S.	1583.428
1994 03/07 14:31	8. Fukui	1656.285
1994 03/07 14:59	9. Morimiya	2020.857
1994 03/07 16:38	10. Kawahara	1464.571
1994 03/14 17:06	11. Shimoda	1527.714
1994 03/30 11:58	12. Kato	1548
1994 04/04 16:26	13. Hayashi	1623.428
1994 04/04 16:45	14. Kawashima	1911.714
1994 04/11 20:19	15. Matsubara	1702.571
1994 04/18 18:56	16. Y.T.	1212
1994 04/18 19:04	17. Tanaka	1304
1994 04/18 19:19	18. Nichimura	1681.142
1994 04/16 12:21	19. Uchida	1665.678
Group average		1605

Table XII
Averaged BP Values (Cirrhosis of Liver)

Dates of measurement	Names	Individual averages
1994 02/09 15:26	1. Seki	1532.285
1994 02/09 16:23	2. Hirata	1660
1994 02/22 11:42	3. Kogure	1706.857
1994 03/18 17:04	4. Ogura	1630
1994 03/28 19:06	5. Shinohara	1517.428
1994 04/04 20:56	6. Enomoto	1337.714
1994 04/15 11:27	7. Onuki	1736
1994 04/27 16:23	8. Shitou	1412.571
Group average		1567

Table XIII
Averaged BP Values (Liver Failure & Cancer)

Dates of measurement	Names	Individual averages
1994 02/09 15:56	1. Arai	1013.714
1994 02/10 16:27	2. R.M.	1432.571
1994 02/14 21:05	3. Imai	1526.571
1994 04/18 18:40	4. Murakoshi	1703.142
1994 04/27 16:55	5. Anakura	1453.714
1994 02/21 19:29	6. T.M.	1496.571
1994 02/21 19:55	7. Nakagawa	1273.428
1994 02/21 20:17	8. Yoshida	1283.142
1994 02/28 20:04	9. Itou	1280.285
1994 03/03 17:22	10. Yauchi	1907.428
1994 03/07 15:14	11. Horikawa	1192
1994 03/30 11:23	12. Ishii	1176.571
1994 04/21 17:13	13. Matsuuchi	1327.142
Date not recorded	14. Kyosei	1667.428
Date not recorded	15. Matsumoto	1471.142
Date not recorded	16. Toyota	1380
Group average		1412

and cancer is 1412μA. This indicates that the entire Ki energy of liver failure and cancer patients (serious cases of liver disease) is lower than that of mild and intermediate cases of liver disease. Tables X to XIII substantiate that the deficiency of the urinary bladder and triple heater meridians, which distribute Ki energy to the entire body; this indicates that the entire level of Ki energy is lowest in patients with liver failure and cancer, in comparison with other liver disease patients, although their lung and spleen meridians are excessive.

Standardized AMI Data Patterns Found in Liver Diseases

The raw value is the actual value measured from each meridian of each patient. The standardized value was calculated as follows. The data of 40 patients were randomly selected from AMI data measured for each month; the standard value for each meridian was calculated by summing each BP value for each meridian and dividing the sum total by 40; and the standardized value was obtained by dividing the BP value of a meridian of a patient with the standard value of the corresponding meridian.

In the case of raw values, there is a general tendency for the lung and spleen meridians to be excessive and for the small intestine and urinary bladder meridians to be deficient. Therefore, it was difficult to judge whether a particular meridian was deficient or excessive in comparison with the value of other subjects, because of the aforementioned general tendency, so the comparison with other subjects was facilitated with standardized values. Next, we will examine the standardized AMI data patterns of each case of liver disease.

Based on data obtained from Tables XIV to XVII, x^2 tests were performed and shown in Tables XVIII to XXI. According to these latter tables, the excessive frequency of hepatitis and excessive and deficient frequencies of liver failure and cancer only showed a significant correlation in the standardized data examination.

Hepatitis

Table XIX shows that there is a significant correlation between excessive frequency distribution and hepatitis.

Table XIV
Fatty Liver, Number of Patients: 9

	Meridians	Standardized Values Deficient Frequencies	Excessive Frequencies
1	LU	3	2
2	LI	1	4
3	ST	2	2
4	SP	4	1
5	HT	0	0
6	SI	2	1
7	UB	1	4
8	KI	2	1
9	HC	1	1
10	TH	1	6
11	GB	2	2
12	LV	3	1
13	DI	2	1
14	SB	3	1

Table XV
Hepatitis, Number of Patients: 19

	Meridians	Standardized Values Deficient Frequencies	Excessive Frequencies
1	LU	8	2
2	LI	0	8
3	ST	2	2
4	SP	2	2
5	HT	6	1
6	SI	5	3
7	UB	5	10
8	KI	9	3
9	HC	2	9
10	TH	2	6
11	GB	6	1
12	LV	2	2
13	DI	3	6
14	SB	5	2

Table XVI
Cirrhosis of Liver, Number of Patients: 8

	Meridians	Standardized Values Deficient Frequencies	Excessive Frequencies
1	LU	1	0
2	LI	1	3
3	ST	1	1
4	SP	1	1
5	HT	1	1
6	SI	2	1
7	UB	3	3
8	KI	1	0
9	HC	2	3
10	TH	0	3
11	GB	3	1
12	LV	4	1
13	DI	1	4
14	SB	3	2

Table XVII
Liver Failure & Cancer, Number of Patients: 16

	Meridians	Standardized Values Deficient Frequencies	Excessive Frequencies
1	LU	1	4
2	LI	0	10
3	ST	3	0
4	SP	5	0
5	HT	1	3
6	SI	2	2
7	UB	3	1
8	KI	3	0
9	HC	1	9
10	TH	1	2
11	GB	6	1
12	LV	11	0
13	DI	0	6
14	SB	2	1

Table XV shows the frequency for excess is 10 for the urinary bladder meridian, 9 for the heart constrictor meridian, 8 for the large intestine meridian, and 6 for the triple heater and diaphragm meridians. The standardized data indicates that Ki energy becomes excessive in the urinary bladder, heart constrictor and large intestine meridians during hepatitis.

Cirrhosis, Liver Failure & Cancer

Table XX shows that the frequency for deficiency or excess is not at the 5% significance level in cirrhosis of liver. Table XXI shows that the frequencies for deficiency as well as for excess are high at more than the 0.1% significance level, and there is a correlation with liver failure and cancer.

Table XVII shows that the frequency for deficiency is 11 for the liver meridian, 5 for the spleen meridian, and that the frequency for excess is 10 for the large intestine meridian and 9 for the heart constrictor meridian, in examination of standardized data for liver failure and cancer patients. The deficiency of Ki energy (deficient frequency 11) in the liver meridian seems to coincide with our clinical experience that the liver meridian is deficient in the liver failure and cancer patients. The high frequency (9) for excess in the heart constrictor meridian, which forms the Absolute Yin channel with the liver meridian, seems to indicate that Ki energy is excessively accumulated in the heart constrictor meridian with a corresponding deficiency in the liver meridian.

Comparisons Between Raw and Standardized Data Analyses

The raw value analyses indicated significant deficient/excessive frequency patterns in 7 out of 8 examinations. However, the standardized value analyses showed significant deficient/excessive frequency patterns in only 3 out of 8 examinations, resulting in a lack of clarity concerning the correlation with cases of liver disease, except for liver failure & cancer.

The raw value examinations of deficiency/excessive patterns of each meridian clearly indicated the correlation with each case of liver disease, and seem to be clinically more applicable than the standardized value examinations.

Table XVIII
χ^2 Test Results (Fatty Liver)

Standardized Values	Deficient Frequencies	Excessive Frequencies
P = 0.05	22.362	22.362
Degree of Freedom	13	13
Number examined	14	14
χ^2	7.740	18.111

Table XIX
χ^2 Test Results (Hepatitis)

Standardized Values	Deficient Frequencies	Excessive Frequencies
P = 0.05	22.362	22.362
Degree of Freedom	13	13
Number examined	14	14
χ^2	21.842	30.684

Table XX
χ^2 Test Results (Cirrhosis of Liver)

Standardized Values	Deficient Frequencies	Excessive Frequencies
P = 0.05	22.362	22.362
Degree of Freedom	13	13
Number examined	14	14
χ^2	9.833	12.166

Table XXI
χ^2 Test Results (Liver Failure & Cancer)

Standardized Values	Deficient Frequencies	Excessive Frequencies
P = 0.05	22.362	22.362
Degree of Freedom	13	13
Number examined	14	14
χ^2	40.333	51.820

However, in serious cases of liver disease (liver failure and cancer), the frequency for deficiency is highest in the liver meridian according to the standardized value examination. This is important because it has been clinically observed that the standardized BP value (parameter of Ki energy) is lowest in the meridian that has the same name as the seriously diseased organ (such as in cancer). Therefore, it is desirable to make diagnoses based on the excessive/deficient patterns of raw values in each case of liver disease, referring to standardized values.

CONCLUSIONS

Patterns of Fatty Liver

In fatty liver, the frequency for excess is 9 for the stomach (liver) branch meridian, 5 for the lung meridian and 4 for the spleen, diaphragm and kidney meridians. Therefore, the pattern is in descending order the stomach (liver) branch, lung, spleen, diaphragm and kidney. According to the examination of deficient/excessive patterns of meridians that are considered connected with the liver organ, the frequency for deficiency is highest (5) for the heart constrictor meridian (which forms the Absolute Yin channel with the liver meridian) and the frequency for excess is highest (9) for the stomach (liver) branch meridian. Therefore, the deficient/excessive pattern of fatty liver is characterized by deficiency of the heart constrictor meridian and excessiveness of the stomach (liver) branch meridian.

Patterns of Hepatitis

The pattern for deficiency in descending order is the heart constrictor, triple heater, small intestine and urinary bladder meridians. The pattern for excess is the spleen, liver and lung meridians. As previously mentioned, the heart constrictor meridian forms the Absolute Yin channel with the liver meridian. Therefore, the deficient/excessive pattern of hepatitis is characterized by deficiency of the heart constrictor meridian and excessiveness of the liver and spleen meridians.

PATTERNS OF CIRRHOSIS OF LIVER

The pattern for deficiency is in the heart constrictor, gall bladder and urinary bladder meridians. The pattern for excess is in the spleen, liver and lung meridians. Therefore, the deficient/excessive pattern of cirrhosis of liver is characterized by deficiency of the heart constrictor meridian and excessiveness of the liver and spleen meridians.

PATTERNS OF LIVER FAILURE & CANCER

The pattern for deficiency in descending order is the urinary bladder, gall bladder, stomach and triple heater meridians. The pattern for excess is in the order of the lung and spleen meridians. As discussed in section Observations, the lung and spleen meridians together form the Greater Yin channel. Ki energy first manifests in the lung meridian, and the lung and spleen meridians are commonly excessive in many people. In all cases of liver disease (from fatty liver to liver cancer), the lung and spleen meridians are excessive. Therefore, the excessiveness of the lung and spleen meridians observed in liver failure and cancer does not present any specific meaning. The point to be noted in case of liver failure and cancer is the frequency for deficiency is high in the urinary bladder and triple heater meridians, which distribute Ki energy to the entire body. That is, in serious cases such as liver failure and cancer, the entire level of Ki energy is decreased. The lowest BP average in case of liver failure and cancer in comparison with other cases of liver diseases, substantiates this.

In the examination of deficient/excessive pattern of liver failure and cancer, the deficient nature of the urinary bladder, gall bladder, stomach and triple heater seems important.

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5. *Comparisons of Diagnostic Methods in Western & Eastern Medicine On BP & AP; A Correlation Between Ki Energy and Environmental Conditions* (Human Science Press, 1999), ISBN: 4-87960-706-1
6. **28 Well Points.** It is said in traditional acupuncture theory that the 12 regular meridians (lung, large intestine, stomach, spleen, heart, small intestine, urinary bladder, kidney, heart constrictor, triple heater, gall bladder & liver) start or end their bilateral individual flow at the tips of the fingers or toes. Thus, there are a total of 24 well points bilaterally at the finger and toe tips. However, in these AM measurements, 2 additional meridians (diaphragm and stomach branch), which were discovered by Yoshio Nagahama M.D. and Masao Maruyama M.D. and are said to end at the tip of the 3rd finger and the 2nd toe, are also included for evaluation, thus bringing the total to 14 meridians (total 28 well points). The details of these additional meridians are in *Keiraku no Kenkyu* (A Study of Meridians) by the aforementioned authors, published by Kyorin Shoin, Tokyo.
7. **Meridian Names.** The names of meridians in the figures of this paper are abbreviated according to International agreements: lung meridian as LU, large intestine meridian as LI, stomach meridian as ST, spleen meridian as SP, heart meridian as HT small intestine meridian as SI, urinary bladder meridian as UB, kidney meridian as KI, heart constrictor meridian as HC, triple heater meridian as TH, gall bladder meridian as GB, liver meridian as LV, diaphragm meridian as Dl, stomach branch meridian as SB.
8. **Yin-Yang and Three Yin–Three Yang relationships**

Yin-Yang Relationship

According to traditional acupuncture theory it is thought that between the Yin and corresponding Yang meridian in a particular Yin-Yang meridian pair, there exists a strong competitive relationship. This competition is such that if one of these meridians begins to predominate, the other meridian acts to reduce this predominance, thus tending to restore the original balance. If, however, this predominance becomes excessive, balance becomes unattainable and disease ensues.

Yin Meridian	Yang Meridian
Lung (LU)	Large Intestine (LI)
Spleen (SP)	Stomach (ST)
Heart (HT)	Small intestine (SI)
Kidney (KI)	Urinary Bladder (UB)
Heart Constrictor (HC)	Triple Heater (TH)
Liver (LV)	Gall Bladder (GB)

Yin-Yang and Three Yin—Three Yang relationships.
Yin-Yang Relationship. *(Cont.)*

Six Yin-Yang Meridian Pairs and Three Yin-Three Yang Channels

arm - Lung meridian	→	Large intestine - arm meridian	
Greater Yin		↓	**Sunlight Yang**
leg - Spleen meridian ↓	←	Stomach meridian - leg	
arm - Heart meridian	→	Small intestine - arm meridian	
Lesser Yin		↓	**Greater Yang**
leg - Kidney meridian ↓	←	Urinary bladder - leg meridian	
arm - Heart constrictor meridian	→	Triple heater - arm meridian	
Absolute Yin		↓	**Lesser Yang**
leg - Liver meridian	←	Gall bladder - leg meridian	

The lesser Yang indicates the beginning stage of Yang, the Sunlight the flourishing stage, and the Greater Yang, the ending. The lesser Yin indicates the beginning stage of Yin, the Greater Yin the flourishing stage, and the Absolute Yin, the ending.

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