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Public Health
PI-01

PI-01

White blood cell count and common carotid artery intima-media thickness in healthy subjects with abdominal obesity

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Background:
Abdominal obesity is a risk factor for cardiovascular disease (CVD) worldwide, and is associated to an increased the risk of clinical atherosclerotic diseases. Some studies have shown that waist circumference (WC) is a better indicator of abdominal obesity and a better predictor of CVD.

Objective:
The common carotid artery intima-media thickness (CCA-IMT) was reported to be a good marker for atherosclerosis. Our aim was to analyze the relationship between cardiovascular risk factors and CCA-IMT in healthy subjects with abdominal obesity.

Methods:
Cross-sectional analysis of 71 subjects (25 men and 46 women, age 41-75 years) who had no apparent history of CVD were enrolled consecutively in this study. After accurate clinical examinations and biochemical evaluations, the enrolled subjects underwent B-mode ultrasonography to assess CCA-IMT. The study participants were divided into two groups according to presence of abdominal obesity, defined by WC.

Results:

Table 1. Baseline characteristics of the study population

Characteristics	Total subjects (n=71)	Group 1 abdominal obesity (n=45)	Group 2 No abdominal obesity (n=26)	Group 1 vs. Group 2 *p value*
Age (years)	58.6 ± 8.3	59.2 ± 8.1	57.4 ± 8.5	0.38
Males, n (%)	25 (35.2)	14 (31.1)	11 (42.3)	0.35
Waist (cm)	82.9 ± 8.2	86.5 ± 6.6	76.5 ± 6.8	*<0.001*
BMI (kg/m^2)	24.0 ± 2.9	25.1 ± 2.7	22.1 ± 2.4	*<0.001*
Alcohol, current/past, n (%)	23 (32.4)	15 (33.3)	8 (30.8)	0.83
Smoker, current/past, n (%)	10 (14.1)	5 (11.1)	5 (19.2)	0.35
Regular exercise (%)	43 (60.6)	27 (60.0)	16 (61.5)	0.90
Hypertension, n (%)	17 (23.9)	14 (31.1)	3 (11.5)	*0.06*
Hyperlipidemia, n (%)	7 (9.9)	4 (8.9)	3 (11.5)	0.72
Metabolic syndrome, n (%)	30 (42.3)	25 (55.6)	5 (19.2)	*<0.005*
CCA IMT (mm)	0.82 ± 0.12	0.84 ± 0.13	0.78 ± 0.11	*0.03*
Heart rate (beats/min)	66 ± 8	66 ± 8	67 ± 9	0.48
SBP (mmHg)	127 ± 14	129 ± 14	125 ± 13	0.24
DBP (mmHg)	82 ± 10	83 ± 10	80 ± 10	0.27
PP (mmHg)	47 ± 8	48 ± 9	46 ± 7	0.53
MAP (mmHg)	99 ± 13	100 ± 13	96 ± 11	0.17
WBC (10^3/μl)	5.5 ± 1.1	5.6 ± 1.1	5.2 ± 1.0	*0.09*
RBC (10^6/μl)	4.8 ± 0.6	4.8 ± 0.6	4.9 ± 0.7	0.34
Hemogolbin (g/dl)	14.0 ± 1.3	13.8 ± 1.3	14.2 ± 1.2	0.22
Hematocrit (%)	41.6 ± 3.0	41.3 ± 3.1	42.1 ± 2.8	0.29
Platelet (10^3/μl)	229 ± 50	234 ± 53	222 ± 42	0.33
HbA1c (%)	5.7 ± 0.3	5.7 ± 0.3	5.6 ± 0.3	0.23
Fasting glucose (mg/dl)	104 ± 7	105 ± 8	102 ± 7	0.14
Creatinine (mg/dl)	0.8 ± 0.2	0.8 ± 0.2	0.8 ± 0.2	0.63
Uric acid (mg/dl)	5.5 ± 1.2	5.5 ± 1.2	5.6 ± 1.2	0.63
AST (U/L)	24 ± 8	25 ± 8	23 ± 6	0.26
ALT (U/L)	24 ± 13	27 ± 15	21 ± 7	*0.07*
TG (mg/dl)	125 ± 75	135 ± 81	107 ± 59	0.13
T-CHO (mg/dl)	197 ± 32	197 ± 36	196 ± 27	0.91
HDL-c (mg/dl)	52 ± 12	51 ± 13	54 ± 10	0.30
LDL-c (mg/dl)	116 ± 30	117 ± 31	115 ± 29	0.82
Lp (a) (mg/dl)	14.7 ± 14.2	16.4 ± 16.5	11.9 ± 8.3	0.20
log Lp (a)	1.0 ± 0.39	1.0 ± 0.43	0.98 ± 0.29	0.84
Albumin (g/dl)	4.6 ± 0.2	4.6 ± 0.2	4.7 ± 0.2	0.37
Globulin (g/dl)	2.8 ± 0.4	2.8 ± 0.4	2.7 ± 0.3	0.36
hs-CRP (mg/dl)	0.14 ± 0.14	0.16 ± 0.15	0.11 ± 0.11	0.18
log hs-CRP	-1.02 ± 0.38	-0.96 ± 0.37	-1.12 ± 0.39	*0.08*
Homocysteine (μmol/L)	10.3 ± 5.0	10.5 ± 5.8	10.1 ± 3.3	0.75
D-Dimer (mg/L)	0.31 ± 0.26	0.37 ± 0.3	0.22 ± 0.07	*0.02*
log D-Dimer	-0.58 ± 0.24	-0.52 ± 0.26	-0.69 ± 0.17	*<0.005*
Fibrinogen (mg/dl)	286 ± 44	293 ± 48	274 ± 36	*0.09*

Figure 1. Extracranial duplex sonography detection of CCA-IMT

Abdominal obesity
Waist circumference
Male > 90cm
Female > 80cm

Figure 2. Abdominal obesity
Source from: http://gadogadohealth.com/why-pot-belly-is-dangerous-and-how-to-get-rid-of-it/

Table 2. Multiple linear regression analysis of the determinants of CCA-IMT

Variables	Subjects with abdominal obesity		
	β	SE	*p* value
Age (year)	0.007	0.002	*<0.005*
Sex (male vs. female)	-0.101	0.066	0.14
BMI (kg/m^2)	-0.014	0.009	0.12
Waist (cm)	0.007	0.004	*0.09*
Smoker (yes vs. no)	-0.065	0.058	0.27
Regular exercise (yes vs. no)	0.007	0.038	0.85
Metabolic syndrome (yes vs. no)	0.074	0.037	*0.06*
Hypertension (yes vs. no)	0.030	0.040	0.46
WBC (per 10^3/μl)	0.047	0.017	*<0.01*
Creatinine (per mg/dl)	0.006	0.123	0.96
ALT (per U/L)	-0.001	0.001	0.93
log hs-CRP	0.047	0.049	0.34
log D-Dimer	0.044	0.063	0.48
Fibrinogen (per mg/dl)	-0.001	0.001	*0.08*

Conclusions:
Elevated WBC count and older age are independently associated with higher CCA-IMT value in individuals with abdominal obesity. Our data suggest that higher WBC count and older age correlate with early atherosclerotic changes in a population with very low cardiovascular risk.

Reference:
Recio-Rodriguez JI, Gomez-Marcos MA, Patino-Alonso MC, Agudo-Conde C, Rodriguez-Sanchez E, Garcia-Ortiz L; Vasorisk group. Abdominal obesity vs general obesity for identifying arterial stiffness, subclinicalatherosclerosis and wave reflection in healthy, diabetics and hypertensive. *BMC Cardiovasc Disord.* 2012 Feb 1;12:3. doi: 10.1186/1471-2261-12-3.

A-3

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Clinical Physiology
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Clinical Physiology
PG-06

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Public Health

PI-02

Public Health

PI-03

Withdraw

Clinical Physiology

PG-05

Clinical Physiology

PG-07

奇美醫學財團法人 奇美醫院
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PI-02

Epidemiological analysis of the patients with allergy in a medical center at Tainan, Taiwan

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Keywords : Allergy · IgE · Allergen detection system

Introduction

Allergy refers to the body's immune system to induce immunoglobulin E (Ig E) against foreign matter and subsequent inflammation. These foreign substances are called allergens. The prevalence of allergic diseases around the world continues to increase and the common symptoms include asthma, allergic rhinitis, skin rashes, urticaria, and food allergies. Eating habits and environmental factors both play important roles. Thus, identification of allergens is helpful for the prevention and treatment of allergies.

Patients and Methods

In this four-year retrospective study (from January 1, 2012 to December 31, 2015), 36 common allergens were tested in 6,965 allergic Taiwanese subjects, which were selected from various clinical fields at Chi Mei Medical Center, Taiwan. The detection method used is Hitachi OPTIGEN™ specific IgE Assay kit, which includes 18 inhalation, 17 ingestion and 1 contact allergens (table1). It includes patients from pediatrics, dermatology, ENT, rheumatology, family medicine, etc (figure1). The intensity of IgE expression levels is divided into 4 levels - Class 0, 1, 2, 3, 4. Class 0 being a negative response.

Results

3,674 patients out of the 6,965 cases showed positive reaction for one or more allergens; the positive rate was 52.75%. Among them, 1,872 were males (51% positive rate) and 1802 were females (49%). A table2 is show the top three inhalation allergens were dust mites (3,099 cases, 29.7%); house dust mites (2,843 cases, 27.3%); and house dusts (1,640 cases, 11.8%). The top three ingestion allergens were crab (781 cases, 23.5%); shrimp (775 cases, 23.3%); and shelled seafood (296 cases, 8.9%).A table3 positive rates in the inhalant allergen group based on age-groups are: 0-10 years old (21.7%); 11-20 y/o (19.7%); 21-30 y/o (18.8%); 31-40 y/o (17.5%); 41-50 y/o (9.2%); 51-60 y/o (6.7%); and > 60 y/o (6.4%). The results showed that mites were the most common allergens among different age groups and induced the highest reaction level of class 4 (40.4%).

Discussion and Conclusion

In this study, we demonstrated that 52.7% of patients with allergy symptoms had positive reaction to allergens, which is similar to other reports. We found inhalant allergens are more prevalent than ingestion allergens, and it is a vexing problem among allergic patients. The results showed that more than half of the patients react positively to dust mites. Cockroaches, animal furs, and foods including crabs, shrimps, clams, avocados and peanuts, etc. were also important culprits. This study shows that knowledge of these common allergens in southern Taiwan can provide useful information for the allergic patients to avoid.

Table 1 The detection method used is Hitachi OPTIGEN™ specific IgE Assay kit, which includes 18 inhalation, 17 ingestion and 1 contact allergens.

No	Allergens species	No	Allergens species
1	Alternaria	19	Egg yolk
2	Aspergillus	20	Eucalyptus
3	Avocado	21	Timothy Grass
4	Beef	22	Housedust
5	Bermuda Grass	23	Japanese Cedar
6	Wheat	24	Latex
7	Dog dander	25	Milk
8	Cheddar Cheese	26	Mite(farinae)
9	Chicken Feathers	27	Mite(pterony)
10	White Mulberry	28	Peanut
11	Cladosporium	29	Penicillium
12	Clam	30	Pigweed Mix
13	Cockroach Mix	31	Pork
14	Codfish	32	Ragweed Mix
15	Tuna	33	Willow, Black
16	Crab	34	Shrimp
17	Cat dander	35	Soybean
18	Egg white	36	Yeast(Brewers)

Figure 1 The patients from pediatrics, dermatology, ENT, rheumatology, family medicine, allergen positive rate of statistical analysis.

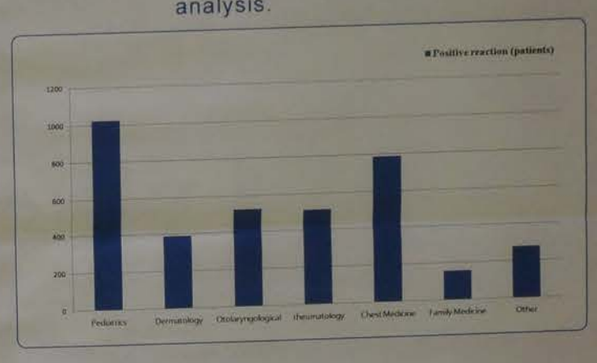
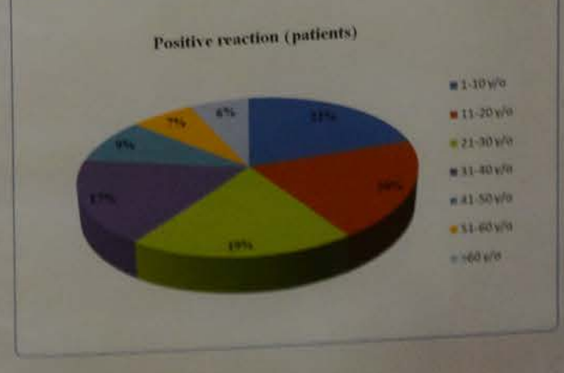


Table 2 The top three inhalation allergens and ingestion allergens.

	Samples (cases)	Percentage (%)
Inhalation Allergen		
Top 1 Mite (farinae)	3099	29.7
Top 2 Mite (pterony)	2843	27.3
Top 3 Housedust	1640	11.8
Ingestion Allergen		
Top 1 Crab	781	23.5
Top 2 Shrimp	775	23.3
Top 3 Clam	296	8.9

Table 3 Positive rates in the inhalant allergen group based on age-groups.

Age-groups	Positive reaction (patients)	APositive rate (%)
1-10 y/o	797	21.7
11-20 y/o	722	19.7
21-30 y/o	692	18.8
31-40 y/o	644	17.5
41-50 y/o	337	9.2
51-60 y/o	247	6.7
>60 y/o	235	6.4
total	3674	100.0



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Public Health
PI-02

Chi Mei Hospital, Liouying

PI-02

Epidemiological analysis of the patients wi… allergy in a medical center at Tainan, Taiwa…

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Department of Clinical Pathology, Chi Mei Medical Center, Liouying, Tai…

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11	Cladosporium	29	Penicilli…
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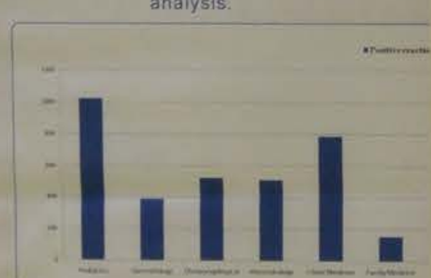
13	Cockroach Mix	31	Pork
14	Codfish	32	Ragweed
15	Tuna	33	Willow, E…
16	Crab	34	Shrim…
17	Cat dander	35	Soybe…
18	Egg white	36	Yeast(Bre…

Figure 1 The patients from pediatrics, derr… ENT, rheumatology, family m… allergen positive rate of st… analysis.



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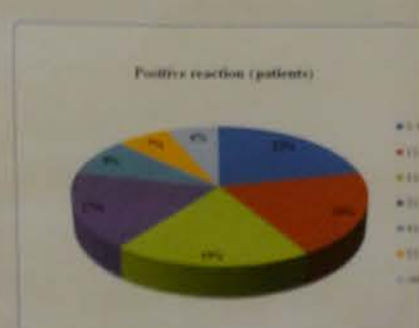

Public Health
PI-04

PI-04

Rubella immunity among pregnant women in Taiwan, 1999-2014.

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Introduction

Vaccination is the best strategy to prevent rubella and congenital rubella. The aim of our study was to assess the immunity to rubella and determine rubella virus antibody titers in pregnant women who were offered a single dose of rubella vaccine at different ages of their lives.

Methods

A total 15,067 rubella IgG antibody test results for Taiwanese pregnant women who received routine prenatal checkup at Fooyin University Hospital from 1999 to 2014 were analyzed in this study. The women were divided into five birth cohorts in order to compare their rubella seronegativities and antibody titers according to the different period of rubella vaccination policy in Taiwan.

Results

The total rubella seronegativity rate was 11.2% (95% CI: 10.7 – 11.7%) and the mean rubella antibody titers was 51.0 IU/mL (SD = 54.7 IU/mL). There was lowest rubella seronegativity in the junior school cohort, 7.6% (95% CI: 6.9 – 8.2%). The seronegativities significantly high in the preschool cohort and in the 15-month-old cohort, 14.9% (95% CI: 13.2 – 16.6%) and 14.8% (95% CI: 11.5 – 18.1%), respectively. The OR values were 2.1 (95% CI: 1.8 – 2.5, p < 0.001) in the preschool cohort and 2.2 (95% CI: 1.6 – 2.8, p < 0.001) in the 15-month-old cohort, respectively, against to the junior school cohort. Women in the 15-month-old cohort have lowest average rubella IgG titer, 25.4 IU/mL.

Conclusion

The total rubella seronegativity rate was 11.2% in all native pregnant women. The younger women have highest seronegativities and lowest average rubella titer. We recommend that revised catch-up immunization policies should be implemented to younger susceptible women.

Table 2

Seronegativities of rubella antibodies and means of Rubella IgG of pregnant women who received prenatal checkup from 1999 to 2014

Year	Age ± SD (yr)	Sample size	No. of seronegative	Seronegativity (%) (95% CI)	Mean ± SD (IU/ml)
1999	25.9 ± 4.8	1176	158	13.4 (11.5 – 15.4)	52.4 ± 55.8
2000	25.9 ± 5.0	1264	181	14.3 (12.4 – 16.3)	51.6 ± 57.3
2001	26.3 ± 5.0	1036	143	13.8 (11.7 – 15.9)	50.9 ± 51.8
2002	26.3 ± 5.0	1059	120	11.3 (9.4 – 13.2)	57.4 ± 60.2
2003	26.3 ± 5.0	858	85	9.9 (7.9 – 11.9)	52.1 ± 61.8
2004	26.8 ± 5.0	939	84	8.9 (7.1 – 10.8)	57.1 ± 58.1
2005	26.6 ± 5.0	887	97	10.9 (8.9 – 13.0)	53.7 ± 54.0
2006	27.0 ± 5.1	956	105	11.0 (9.0 – 13.0)	53.9 ± 61.4
2007	27.3 ± 4.8	1271	108	8.5 (7.0 – 10.0)	58.2 ± 62.5
2008	27.5 ± 4.9	1031	97	9.4 (7.6 – 11.2)	54.2 ± 57.7
2009	27.6 ± 5.0	808	91	11.3 (9.1 – 13.4)	51.5 ± 54.8
2010	28.0 ± 5.2	761	71	9.3 (7.3 – 11.4)	53.0 ± 52.0
2011	28.5 ± 5.0	811	78	9.6 (7.6 – 11.6)	43.6 ± 45.7
2012	28.7 ± 5.2	791	86	10.9 (8.7 – 13.0)	40.5 ± 39.8
2013	29.2 ± 5.3	696	80	11.5 (9.1 – 13.9)	40.6 ± 44.1
2014	29.5 ± 5.1	723	106	14.7 (12.1 – 17.2)	33.5 ± 30.2
Total	27.2 ± 5.1	15067	1690	11.2 (10.7 – 11.7)	51.0 ± 54.7

Table 1

Rubella and MMR vaccination program in Taiwan

Time	Type of vaccine (dose given)	Population	Birthdate (yy/mm) of affected cohort
1986-1991	Rubella (1)	Girls in the third year of junior school (15 years old)	1971/9-1976/8
1992-1994	MMR (1)	All junior high school students (15 years old)	1976/9-1979/8
		All elementary school students (7-12 years old)	1979/9-1985/8
		Preschool children	1985/9-1990/8
1992-2001/8	MMR (1)	15 months old children	1990/9-1994/8
2001/9-2005/12	MMR (2)	First dose: 15 months years old Booster dose: first year of elementary school	Born after 1994/9
2006/1-2009/4	MMR(2)	First dose: 12-15 months years old Booster dose: first year of elementary school	
2009/4-2012/4	MMR (2)	First dose: 12 months years old Booster dose: first year of elementary school	
2012/4-current	MMR (2)	First dose: 12 months years old Booster dose: 5 years old	
1987-2001/6	Rubella (1)	Women of childbearing age with seronegative rubella IgG	Childbearing age
2001/7-current	MMR (1)	Women of childbearing age with seronegative rubella IgG	Childbearing age

Adapted from the report of the Center for Disease Control, Taiwan.
MMR: Measles, Mumps, and Rubella

Table 3

Seronegativities of rubella antibodies, OR, and means of Rubella IgG of pregnant women in different cohorts.

Cohort	Age ± SD (yr)	Sample size	No. of seronegative	Seronegativity (%) (95% CI)	OR (95% CI)	Mean ± SD (IU/ml)
No vaccination	33.7 ± 3.7	1712	471	27.5 (25.4 – 29.6)	4.6 (4.0 – 5.3)[b]	47.3 ± 64.5[c]
Junior school cohort	28.6 ± 4.2	6227	471	7.6 (6.9 – 8.2)	Reference	60.2 ± 61.7[c]
Primary school cohort	25.3 ± 4.0	4968	426	8.6 (7.8 – 9.4)	1.2 (1.0 – 1.3)[a]	49.6 ± 47.0[c]
Preschool cohort	22.6 ± 3.0	1715	256	14.9 (13.2 – 16.6)	2.1 (1.8 – 2.5)[b]	33.5 ± 32.6[c]
15-month-old cohort	20.0 ± 2.0	445	66	14.8 (11.5 – 18.1)	2.1 (1.6 – 2.8)[b]	25.4 ± 21.1[c]
Vaccinated cohort	26.3 ± 4.7	13355	1219	9.1 (8.6 – 9.6)		51.5 ± 53.3
Total	27.2 ± 5.1	15067	1690	11.2 (10.7 – 11.7)		51.0 ± 54.7

ap = 0.005, bp < 0.001
cp < 0.005 compared mutually in vaccinated cohort

C-2 C-2

Public Health
PI-05

VITAMIN D DEFICIENCY IS HIGH AMONG YOUNG MONGOLIAN CHILDREN

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Introduction

Rickets in young Mongolian children (55%) is a significant problem. The high levels of rickets have been attributed to low intakes of vitamin D. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. The disease can be prevented by sufficient intake of the vitamin. Serum concentration of 25-hydroxyvitamin D (25(OH)D) is the best indicator of vitamin D status. It reflects vitamin D produced cutaneously and that obtained from food and supplements

Survey goal

Investigate the status of vitamin D in young Mongolian children

Subjects and Methods

- 98 children (54 male and 44 female) 6-36 months of age from Ulaanbaatar city and two, western and eastern, provinces of Mongolia
- Concentrations of serum 25(OH)D were determined using a radioimmunoassay procedure

Results

Table 1. Mean concentrations of 25(OH)D

Age, gender and setting	n	25(OH)D (nmol/L)
Males	54	25.30
Females	44	33.65
Ulaanbaatar city	70	29.15
Khovd province (western)	17	31.77
Dornod province (eastern)	11	23.24
6-11.9 months	20	21.86
12-23.9 months	43	30.90
24-36 months	35	30.55

The overall mean concentration of serum 25(OH)D was 29.00 nmol/L. Although the indicator was lower in boys than in girls, lowest in the youngest age group and lower in the eastern province, the differences were not statistically significant (p>0.05).

Figure 1. Prevalence of vitamin D deficiency

Vitamin D deficiency (<25 nmol/L) was detected in 61.2% of the surveyed children with higher frequencies in boys (66.7% vs. 55.8% in girls), in UB (65.7% vs. 51.9% in rural areas) and in younger children (73.7% in 6-11.9-month-olds vs. 59.1% in the 12-23.9 months and 58.8% in the 24-36 months of age group), but no statistically significant gender, setting or age differences were observed in the prevalence of the deficiency (p>0.05).

Conclusion

The high level of vitamin D deficiency indicates that there is a need to promote the expansion of the coverage of vitamin D supplements among young children


B-2
B-2
Public Health
PI-06
Analysis of the Abnormal Rate of Blood Lead in Hsin-chu Residents of Taiwan
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1. INTRODUCTION
Since lead exposure has been an important issue of public healh in Taiwan, regulations demand health ranking management implemented for lead-exposed workers by periodic health examination. Blood lead（BPb）level, as the biological indicator, is required to evaluate the potential lead poisoning; with standards set as follows: below 40 μg/dL for male workers, 30 μg/dL for female workers respectively. In Hsin-chu region, the feature of densely-built factories highlights the need of annual BPb examination in jobs-specific population. As a 『Specified Hospital for Physical Examination of Occupational Disease Prevention of Labor Insurance』 by Ministry of Labor, we hope providing the analyzed BPb data in the past four years as a reference for disease prevention in public health.
2. METHOD & RESULT
A retrospective review of BPb data from 2012 to 2015 was made: 1571 clinical specimens, from 1128 male and 443 female cases, were collected and examined by atomic absorption methods. Based on risk management, biology reference intervals under current regulated BPb standard: below 20 μg/dL for males, 15 μg/dL for females were established as the determination criteria. The abnormal rate turned out to be 0.064 ‰ (1/1571)。The BPb level of the only abnormal subject was initial 26.0 μg/dL, then decreased to 4.2 μg/dL upon retest after 5-month follow-up.
勞動部 Ministry of Labor
勞動法令查詢系統
Fig1. Regulations on Prevention of Lead Poisoning by Ministry of Labor
Table1. Abnormal Rate of Blood Lead in Study
Year | Subjects No. (A) | Abnormal No. (B) | Abnormal Rate (C=B/A)
2012 | 279 | 0 | 0%
2013 | 370 | 0 | 0%
2014 | 517 | 1 | 0.19%
2015 | 405 | 0 | 0%
Total | 1571 | 1 | 0.064%
Femerell
Exhaust pipe
Fig2. Prevention Approaches for Lead Workers
3. CONCLUSION
This study suggests that further investigations into the causation be made for individuals with BPb level beyond our biology reference intervals to take timely actions in occupational protection. For example, approaches to lead-free welding, installing exhaust pipe at soldering areas, etc. could prevent patients from persistent exposure to lead-polluted workplace as well as consequent lead poisoning. 「Occupational preventive medicine」 is the goal we will be striving to create and build in the future.
Public Health
PI-07
HEPATITIS A VIRUS INFECTION AMONG APPARENTLY HEALTHY NIGERIAN SUBJECTS
Table 2: Result by Sex Dristribution
Table 3: Result by Age Distribution
Table 1: Sex and Age Distribution of Subjects
Background and Rationale
Materials and Methods
DISCUSSION
Conclusion and Implications
Acknowledgement

HEPATITIS A VIRUS INFECTION AMONG APPARENTLY HEALTHY NIGERIAN SUBJECTS

Public Health
PI-07

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Background and Rationale

- Hepatitis A virus (HAV) infection is an important public health problem around the world, especially in low-income and middle-income regions[1].
- An estimated 1.5 million cases of hepatitis A occur globally each year[2].
- The aetiological diagnosis is made by testing for IgM antibodies to HAV (IgM anti-HAV) in serum[2].
- Seroprevalence is used as a marker of viral transmission in a community, as well as a determinant of disease burden.
- Socioeconomic factors play a major role in the spread of HAV infection.

Materials and Methods

Blood samples were collected from 1532 subjects (1138 males and 394 females) and tested for serum anti-HAV IgM specific antibody, using Aria HAV IgM Rapid test kit (CTK Biotech Inc, CA, USA). The subjects were clients who visited the hospital for routine health check over a 15-month period from November 2014 to February 2016. The subjects were predominantly educated professionals and members of their families. The study was approved by Ethical Committee of the Hospital

RESULTS:

Table 1: Sex and Age Distribution of Subjects

	MALE		FEMALE	
AGE	FREQUENCY	PERCENTAGE (%)	FREQUENCY	PERCENTAGE (%)
1-20YEARS	110	9.7	80	20.3
21-40YEARS	765	67.2	207	52.5
41-60YEARS	253	22.2	82	20.8
61-80YEARS	10	0.9	25	6.3
Total	1138	100.0	394	100.0
MEAN	2.1432		2.1320	
STD. DEVIATION	0.57785		0.80573	

Table 2: Result by Sex Dristribution

RESULT	MALE		FEMALE	
	FREQUENCY	PERCENTAGE (%)	FREQUENCY	PERCENTAGE (%)
POSITIVE	38	3.3	7	0.6
NEGATIVE	1100	96.7	387	34.0
TOTAL	1138	100.0	394	34.6
MEAN	1.9666		1.9822	
STD.ERROR OF MEAN	0.17974		0.13227	

Table 3: Result by Age Distribution

	POSITIVE		NEGATIVE	
AGE	FREQUENCY	PERCENTAGE (%)	FREQUENCY	PERCENTAGE (%)
1-20YEARS	5	0.3	185	12.4
21-40YEARS	32	2.2	940	63.2
41-60YEARS	8	0.5	327	22.0
61-80YEARS	-	-	35	2.4
Total	1443	100.0	1487	100
MEAN	2.0667		2.1426	
STD.ERROR OF NAME	0.53936		0.64686	

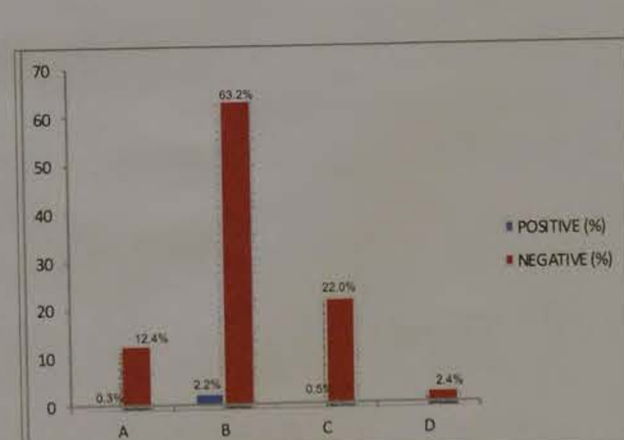

Figure 1
KEY: AGE
A=1-20YEARS
B=21-40YEARS
C=41-60YEARS
D=61-80YEARS

DISCUSSION

Table 1 shows sex and age distribution of the subjects. A total of 1138 subjects participated in the study. For males, age group of 21-40 years had the highest frequency of 765(67.2%),followed by age group 41-60 years with frequency of 253(22.2%),followed by 1-20 years with frequency of 110(9.7%) and 61-80 years had the least frequency of 10(0.9%).For the females, age group 21-40 years has the highest frequency of 207(52.5%),followed by age group 41-60 years with frequency of 82(20.8%),followed by 10-20 years with frequency of 80(20.3%) and 61-80 years had the lowest frequency of 25(6.3%).This shows that those in the age group of 21-40 years had the highest number of participation in the study. This infection can be easily transmitted through fecal-oral route, by close contact with infected person, and contaminated food and water and even blood products[3]. Prevalence of HAV infection is not the same in different parts of the world (varies between 15% and 100%), and depends on geographic area, sanitary levels and socioeconomic conditions[4,5,6,7]. Meanwhile, a shifting epidemiological pattern from high to intermediate and low seropositivity has been shown in many countries, some of which are underdeveloped and developing countries[8,9].

Table 2 shows result by sex distribution of the study population. For males, 38(3.3%) were positive to anti-HAV and 7(0.6%) tested positive to anti-HAV in the females. This shows that HAV is more in males than in females. Transmission of HAV occurs more through faecal-oral route and spread more in unhygienic places. This could mean that the female subjects of the study population adhere to their personal hygiene more than their male counterparts.

Table 3 shows the result by age distribution. The subjects within the age bracket 21-40 years had the highest positive result of 32(2.2%) which is in accordance with the work done in University College Hospital, Ibadan, Nigeria with the highest prevalence on the 21-30 years age group 84(5.5%)[10]. Ikobah et al reported a prevalence of 55.2% in a study of children from a Nigerian rural community of lower social economic background[10]. Hepatitis A virus infection is often asymptomatic in childhood and its morbidity and fatality increase by age. In a study on newly hired employees of a care center in Riyadh in 2006, 67% were seropositive; whereas, 86% of seropositivity was shown by Fathalla et al among 11674 healthy population of Eastern Saudi[11,12]. More attention should be given to the subjects in the age group 21-40 years who are at their reproductive age and the major work force of the country.

Figure 1 is a histogram of the percentage positive and negative results by age groups.

Conclusion and Implications

The seroprevalence (2.94%) of HAV among the subjects of this study is considerably lower than the previous reports from Nigeria. The lower prevalence in this study could be due to the higher socioeconomic status of the subjects, who were mainly professionals and their family members. The reduced prevalence could be due to improved food hygiene, immunization and greater awareness among the subjects of the study group. Improvement in hygienic and socio-economic conditions has resulted in a decrease in the prevalence of the disease.

Acknowledgement

We express our deep appreciation and gratitude to the medical laboratory staff, doctors and nursing staff in Dr. Hassan's Hospital and Diagnostic Centre, Abuja for the technical assistance that made this study possible.

Public Health

PI-08

Assessment of the glucose tolerance among young Japanese subjects - by the shape of plasma glucose concentration curve during OGTT -

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Introduction

The shape of plasma glucose concentration curve during 75g oral glucose tolerance test (OGTT) is suggested to be a predictor of future risk for type 2 diabetes mellitus (T2DM) among middle aged Caucasian subjects. In this study, we assessed the shape of plasma glucose concentration curve during OGTT among young Japanese subjects.

Background

1) *A peak of the insulin secretion is delayed in comparison with NGT and IFG in IGT(664s, 40-70 years old of Caucasians).*

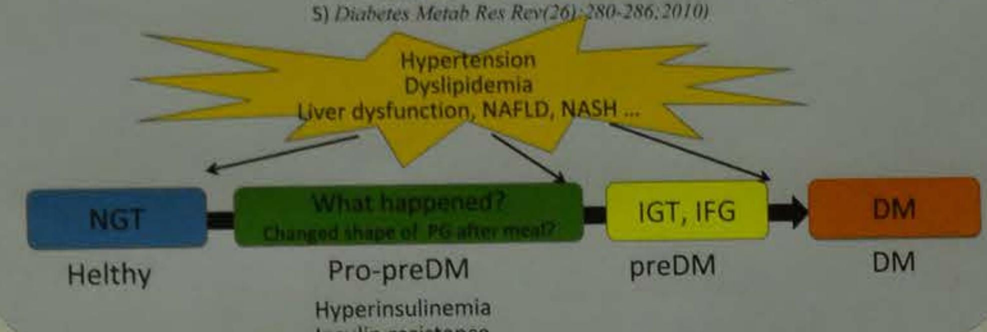
2) *Subjects (311 an average of 35 years old of Caucasians) is classified by the shape of plasma glucose concentration during OGTT. The biphasic grope, which rises after plasma glucose decreased once, is higher in insulin sensitivity, and BMI and insulin resistance are low.*

3) *Subjects(583 an average of 60 years old of Japanese) is classified by the shape of plasma glucose concentration during OGTT. The biphasic grope, which rises after plasma glucose decreased once, is higher in insulin sensitivity, and BMI and insulin resistance are low.*

4) *Subjects(400s, 36-70 years old of Japanese diaspora) are divided five groups, based upon the time at which their serum insulin during the OGTT, who need long time before serum insulin decreasing are higher risk for future T2DM*

5) *Subjects(2,445 an average of 50 years old of Caucasians) are divided four groups, based upon the time at which their plasma glucose concentration during the OGTT, who need long time before plasma glucose decreasing are higher risk for future T2DM*

1)Diabetes care(26):868-874;2003 2) Diabetes care(26):1026-1033;2003
3) Int J Clin Pract (59):427-432;2005 4)Diabetes Care (36):1229-1235,2013
5) Diabetes Metab Res Rev(26):280-286;2010)



Methods

487 young Japanese subjects received an OGTT following a 12-h overnight fast. Plasma glucose and serum insulin concentrations were measured at 0, 30, 60 and 120 min. Plasma glucose, insulin, C-peptide, hemoglobin A1c (HbA1c), glycoalbumin and another clinical laboratory data were determined in fasting condition. 17 people were excluded for missing values, 470 people were classified in four groups based on the shape of plasma glucose and be analyzed it.

Table 1. Characteristics of 487 subjects

Character	total	male	female
Age(year)	24.4 ± 2.8	24.5 ± 2.9	24.1 ± 2.5
Gender(male/female)	300 / 187		
Height(cm)	167.6 ± 8.5	172.3 ± 6.0	159.7 ± 5.5
Body weight (kg)	59.8 ± 11.1	65.6 ± 9.3	50.3 ± 6.0
BMI(kg/m²)	21.2 ± 2.7	22.1 ± 2.8	19.7 ± 1.9
Plasma glucose 0min (mg/dl)	91.0 ± 6.7	92.3 ± 6.5	88.7 ± 6.4
Plasma glucose 30min (mg/dl)	131.8 ± 24.3	135.8 ± 22.5	125.0 ± 25.7
Plasma glucose 60min (mg/dl)	114.4 ± 28.6	117.1 ± 27.6	109.9 ± 29.8
Plasma glucose 120min (mg/dl)	97.6 ± 20.4	97.5 ± 20.3	97.8 ± 20.7
Serum Insulin 0 min (μU/ml)	6.5 ± 3.7	6.5 ± 4.2	6.4 ± 2.9
Serum Insulin 30 min (μU/ml)	55.3 ± 35.1	52.1 ± 30.7	60.7 ± 41.0
Serum Insulin 60min (μU/ml)	44.7 ± 28.2	42.6 ± 29.1	48.1 ± 26.2
Serum Insulin 120 min (μU/ml)	36.5 ± 26.5	31.9 ± 23.9	44.3 ± 28.9
HOMA-R	1.7 ± 2.1	1.7 ± 2.0	1.7 ± 2.4
Serum C peptide(ng/ml)	1.4 ± 0.7	1.5 ± 0.8	1.4 ± 0.4
HbA1c(%)	5.3 ± 0.2	5.2 ± 0.2	5.3 ± 0.2
Total Cholesterol(mg/dl)	185.0 ± 29.2	184.8 ± 29.6	185.4 ± 28.6
HDL cholesterol(mg/dl)	64.4 ± 14.2	61.6 ± 14.4	69.0 ± 12.4
LDL cholesterol(mg/dl)	100.7 ± 27.3	103.2 ± 28.6	96.6 ± 24.4
Triglyceride(mg/dl)	76.8 ± 45.0	82.3 ± 45.4	67.8 ± 42.9
AST(IU/L)	21.6 ± 6.4	23.1 ± 7.2	19.1 ± 3.8
ALT(IU/L)	19.3 ± 12.7	22.5 ± 14.6	14.0 ± 5.7
γ-GT(IU/L)	21.2 ± 12.3	24.2 ± 13.4	16.3 ± 8.3

Red letter $p<0.05$ between male to female

Results

1) Assessment of 75gOGTT :
NGT : 456, IGT 16 , IFG 1

2) High risk grope of DM onset in future

FPG > 100zmg/dl	51
After 1h PG > 180mg/dl	6
HOMA-R > 2.5	59
Inslinogenic Index < 0.4	33

The 454 NGT subjects were divided into four groups by the shape of plasma glucose concentration curve: 20 (4.4%), 84 (18.5%), 124 (27.3%) and 226 (49.8%) for patterns I, II, III, and IV, respectively. This ratio was the almost same as the study for a past report[5], mean Caucasians in its 50s. Height, body weight, BMI, plasma glucose concentration of each time and serum insulin concentration of 60min are higher in grope III or /and IV compare with grope I. Matsuda index and HDL cholesterol are lower in grope III or/and IV. There was a difference in sex ratio by a group, analysis was performed to man and woman respectively, this tendency did not change except height, body weight, and BMI.

Discussion

In this study, mainly on the 20 years old level, thought several percent of IGT/IFG are already existed. In addition, approximately 10% of FPG>100, after 1h PG> 180 and HOMA-R>2.5 , that are high risk of DM onset in future, are existed. Prevalence of pattern III or IV young Japanese subjects was same as that of middle aged Caucasian subjects. It is suggested that glucose tolerance is weak from youth hereditarily, thus risk of diabetes onset in future may be high in Japanese.

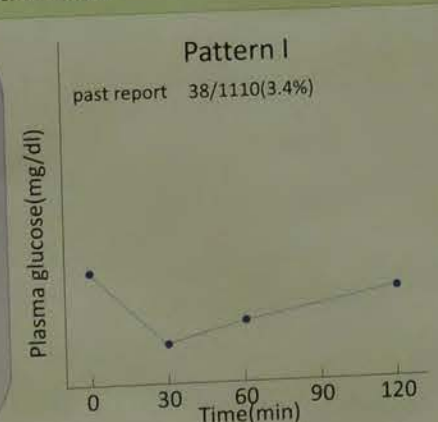
BMI was high in pattern III and IV. Serum insulin concentration is high, on the other hand Matsuda index and HDL-C was low in these group. Slight hyper weight may cause a decrease of the insulin sensitivity, and it is thought that time for decrease of plasma glucose having an influence on lipid metabolism and the insulin secretion extended it.

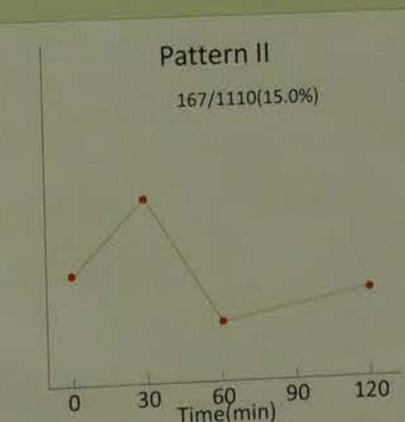
Conclusion

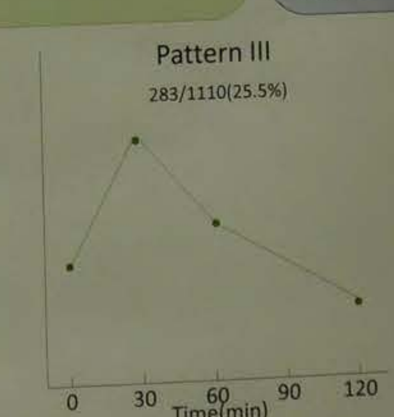
It is reported that pattern III and IV are high-risk groups of the future risk for T2DM among middle aged Caucasian subjects. Prevalence of pattern III or IV for the shape of plasma glucose concentration curve among young Japanese subjects was same as that of middle aged Caucasian subjects. The future risk for T2DM may be high in young Japanese subjects.

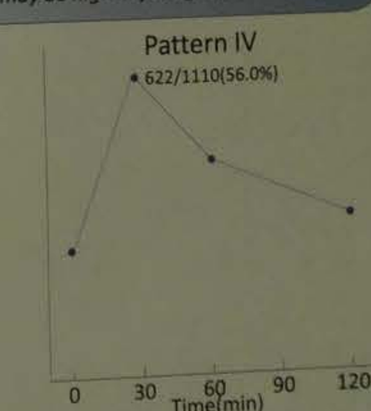
Analysis

In reference to a past report[5], we divided subjects with NGT into four patterns based upon the time (30, 60 or 120 min or never) at which their plasma glucose concentration during the OGTT declined below the fasting glucose concentration. Patterns I, II and III included subjects whose plasma glucose concentration fell below the FPG at 30, 60 and 120 min, respectively; group IV included subjects whose plasma glucose never fell below the FPG at any time during.









Character	Pattern I total	Pattern I male	Pattern I female	Pattern II total	Pattern II male	Pattern II female
Age(year)	23.5 ± 2.1	23.5 ± 2.7	23.5 ± 1.5	24.4 ± 2.7	25.1 ± 3.3	23.6 ± 1.4
Nunber(n)	20	10	10	83	49	34
Height(cm)	164.8 ± 7.4	171.5 ± 3.5	158.9 ± 4.6	166.2 ± 8.6	172.5 ± 6.5	159.1 ± 4.1
Body weight (kg)	55.9 ± 8.8	63.9 ± 3.7	48.8 ± 5.7	56.6 ± 10.1	63.7 ± 8.5	48.6 ± 4.0
BMI(kg/m²)	20.4 ± 2.0	21.7 ± 1.3	19.3 ± 2.0	20.3 ± 2.1	21.3 ± 2.2	19.2 ± 1.4
Plasma glucose 0min (mg/dl)	90.8 ± 6.6	94.6 ± 6.9	86.9 ± 3.8	91.5 ± 6.5	93.2 ± 6.6	88.9 ± 5.6
Plasma glucose 30min (mg/dl)	78.2 ± 12.7	83.9 ± 8.3	72.4 ± 14.8	123.8 ± 18.7	131.5 ± 18.1	112.6 ± 13.6
Plasma glucose 60min (mg/dl)	87.6 ± 25.6	98.1 ± 28.8	77.0 ± 19.4	81.8 ± 10.9	82.8 ± 11.5	80.3 ± 10.1
Plasma glucose 120min (mg/dl)	79.6 ± 14.6	85.3 ± 16.9	73.9 ± 10.8	89.3 ± 14.3	88.4 ± 15.2	90.7 ± 13.2
Serum insulin 0 min (μU/ml)	6.4 ± 3.8	6.8 ± 4.9	6.0 ± 2.8	6.4 ± 3.2	6.0 ± 3.3	7.0 ± 2.9
Serum insulin 30 min (μU/ml)	36.9 ± 23.9	29.9 ± 27.4	43.9 ± 20.3	65.8 ± 50.0	57.0 ± 30.3	78.5 ± 68.4
Serum insulin 60min (μU/ml)	28.4 ± 20.5	26.7 ± 17.0	30.0 ± 25.3	28.6 ± 17.4	26.4 ± 19.2	31.8 ± 14.4
Serum insulin 120 min (μU/ml)	25.6 ± 13.2	24.1 ± 17.3	27.1 ± 9.1	29.8 ± 20.4	23.9 ± 17.3	38.2 ± 21.9
HOMA-R	25.6 ± 13.2	24.1 ± 17.3	27.1 ± 9.1	29.8 ± 20.4	23.9 ± 17.3	38.2 ± 21.9
Serum C peptide(ng/ml)	1.6 ± 0.5	1.7 ± 0.5	1.6 ± 0.5	1.5 ± 0.4	1.4 ± 0.5	1.5 ± 0.3
Matsuda Index	11.4 ± 5.2	12.2 ± 6.6	10.6 ± 4.1	8.7 ± 3.7	9.5 ± 4.1	7.5 ± 2.8
HbA1c(%)	5.3 ± 0.2	5.2 ± 0.2	5.3 ± 0.1	5.3 ± 0.2	5.2 ± 0.2	5.3 ± 0.2
Glicoalbumin	13.2 ± 0.9	12.8 ± 0.3	13.5 ± 1.2	13.7 ± 1.1	13.5 ± 1.2	13.8 ± 0.8
Total Cholesterol(mg/dl)	187.0 ± 29.2	199.0 ± 37.3	175.0 ± 13.6	185.5 ± 27.7	180.0 ± 26.2	193.2 ± 28.7
HDL cholesterol(mg/dl)	69.0 ± 13.4	67.1 ± 15.0	70.9 ± 12.8	68.3 ± 13.8	65.8 ± 15.3	71.8 ± 10.9
LDL cholesterol(mg/dl)	99.5 ± 30.2	114.2 ± 36.0	84.8 ± 15.7	97.0 ± 26.5	93.9 ± 27.3	101.3 ± 25.5
Triglyceride(mg/dl)	74.3 ± 33.4	86.9 ± 42.5	61.6 ± 17.8	68.8 ± 31.1	70.1 ± 29.0	66.9 ± 34.7
AST(IU/L)	23.6 ± 10.3	27.1 ± 14.1	20.0 ± 3.1	22.2 ± 7.4	24.3 ± 8.7	19.2 ± 3.8
ALT(IU/L)	19.7 ± 20.0	26.0 ± 28.1	13.4 ± 3.4	18.1 ± 8.0	20.3 ± 8.4	15.0 ± 6.4
γ-GT(IU/L)	16.8 ± 5.4	19.4 ± 5.8	14.2 ± 4.0	22.7 ± 11.2	26.9 ± 12.5	16.8 ± 5.5

Character	Pattern III total	Pattern III male	Pattern III female	Pattern IV total	Pattern IV male	Pattern IV female
Age(year)	24.6 ± 3.2	24.4 ± 2.9	25.2 ± 3.8	24.3 ± 2.5	24.5 ± 2.7	24.0 ± 2.2
Nunber(n)	123	84	39	244	152	92
Height(cm)	168.4 ± 8.0	172.2 ± 5.6	159.9 ± 6.1	167.9 ± 8.6	172.5 ± 6.3	160.0 ± 6.0
Body weight (kg)	60.5 ± 10.0	64.6 ± 8.6	51.2 ± 6.2	61.0 ± 11.8	66.9 ± 10.1	51.0 ± 6.6
BMI(kg/m²)	21.2 ± 2.3	21.7 ± 2.4	20.0 ± 1.5	21.5 ± 3.1	22.5 ± 3.2	19.9 ± 2.1
Plasma glucose 0min (mg/dl)	92.5 ± 6.6	93.5 ± 6.4	90.6 ± 6.6	90.0 ± 6.7	91.3 ± 6.4	87.9 ± 6.7
Plasma glucose 30min (mg/dl)	131.5 ± 20.4	135.9 ± 18.7	121.9 ± 21.2	139.3 ± 22.0	140.5 ± 22.0	137.2 ± 21.9
Plasma glucose 60min (mg/dl)	116.1 ± 18.6	119.1 ± 18.8	109.6 ± 16.8	126.9 ± 27.0	128.2 ± 25.8	124.6 ± 29.1
Plasma glucose 120min (mg/dl)	81.8 ± 10.3	82.1 ± 10.7	81.3 ± 9.7	109.7 ± 18.3	109.7 ± 18.1	109.9 ± 18.8
Serum insulin 0 min (μU/ml)	6.6 ± 3.6	6.3 ± 3.6	7.1 ± 3.4	6.5 ± 4.0	6.8 ± 4.6	6.0 ± 2.7
Serum insulin 30 min (μU/ml)	53.3 ± 29.6	53.0 ± 32.2	53.9 ± 23.9	54.1 ± 31.0	51.4 ± 29.7	58.5 ± 32.7
Serum insulin 60min (μU/ml)	49.9 ± 29.6	48.0 ± 31.2	54.0 ± 26.3	48.9 ± 28.3	45.9 ± 29.2	54.0 ± 26.5
Serum insulin 120 min (μU/ml)	26.1 ± 14.8	23.0 ± 14.0	32.7 ± 14.7	45.0 ± 30.5	39.9 ± 27.5	53.5 ± 33.6
HOMA-R	26.1 ± 14.8	23.0 ± 14.0	32.7 ± 14.7	45.0 ± 30.5	39.9 ± 27.5	53.5 ± 33.6
Serum C peptide(ng/ml)	1.4 ± 0.4	1.3 ± 0.4	1.4 ± 0.4	1.5 ± 0.9	1.5 ± 1.1	1.4 ± 0.4
Matsuda Index	7.9 ± 3.7	8.1 ± 3.7	7.3 ± 3.7	7.4 ± 3.7	7.6 ± 3.9	7.0 ± 3.3
HbA1c(%)	5.3 ± 0.2	5.3 ± 0.2	5.3 ± 0.2	5.2 ± 0.2	5.2 ± 0.2	5.3 ± 0.2
Glicoalbumin	13.6 ± 1.2	13.3 ± 1.1	14.0 ± 1.1	13.6 ± 1.2	13.3 ± 1.0	14.2 ± 1.1
Total Cholesterol(mg/dl)	183.0 ± 28.2	182.6 ± 28.9	183.6 ± 27.4	185.7 ± 30.2	186.6 ± 30.4	184.4 ± 30.2
HDL cholesterol(mg/dl)	65.8 ± 15.2	63.0 ± 16.0	71.4 ± 12.0	61.8 ± 13.2	59.0 ± 12.6	66.5 ± 12.9
LDL cholesterol(mg/dl)	97.9 ± 25.3	100.2 ± 26.8	93.3 ± 22.2	103.7 ± 27.8	107.3 ± 28.8	97.9 ± 25.5
Triglyceride(mg/dl)	73.7 ± 36.5	79.9 ± 37.4	60.8 ± 31.9	81.6 ± 52.7	87.4 ± 53.2	72.2 ± 51.2
AST(IU/L)	20.4 ± 5.0	21.3 ± 5.6	18.7 ± 2.6	21.8 ± 6.1	23.4 ± 6.6	19.2 ± 4.3
ALT(IU/L)	17.9 ± 12.0	20.4 ± 13.9	12.9 ± 2.9	20.3 ± 13.4	24.1 ± 15.1	14.2 ± 6.4
γ-GT(IU/L)	20.3 ± 11.9	22.8 ± 13.3	15.1 ± 5.8	21.5 ± 13.1	24.4 ± 14.0	16.9 ± 10.2

Red and blue letter $p<0.05$ between I+II vs III or IV

Public Health

PI-09

A Report of Dengue Fever Outbreak in Southern Taiwan

Chan Kun-Chen, Liao Nai-Din, Tsai Ya-Wen, Yang Yu Xuan, Wu Li-Ching

Department of Clinical Pathology, Chi Mei Medical Center, Tainan, Taiwan

Introduction

Dengue virus is a flavi virus transmitted by aedes mosquito. There are four closely related but antigenically distinct serotypes of Dengue viruses (DEN-1-4). Infection with any serotype causes a spectrum of clinical features ranging from asymptomatic infection, undifferentiated fever and classical dengue fever (DF) to life threatening manifestation like dengue haemorrhagic fever (DHF) to dengue shock syndrome (DSS).

A rapid and accurate diagnosis of dengue in the acute phase of illness is important for initiation of therapy as well as for early enhancement of epidemic control measures especially in low endemic areas. Detection of specific IgM antibody by ELISA forms the mainstay for diagnosis. However, IgM antibodies develop after 4 to 5 days of infection (Fig 1). Viral isolation is the gold standard for diagnosis and serotyping of dengue virus infection, but this method is time consuming and requires sophisticated laboratory. Molecular diagnosis such as RT- PCR requires experienced personnel and specialized laboratory equipments. As an alternative the detection of NS1 antigen of dengue virus has been identified as highly conserved glycoprotein expressed on either membrane bound or secreted form.

In Taiwan, 40,000 dengue infections had been reported during the year of 2015. Of all cases, and 214 deaths were reoprted.

The study aimed to detect NS1 antigen among the study population, to compare IgM capture ELISA with NS1 antigen and Dengue virus RT-PCR detection for diagnosis of dengue virus infection, and to identify Dengue virus responsible for the outbreak.

Method:

- Samples

  A total of 4218 serum samples were collected from the dengue suspected cases in the epidemic area. All samples were tested for anti-dengue virus (DV) IgM antibodies, DV-non structural protein 1 antigen (NS1Ag) by rapid test and RT-PCR for DV-RNA detection.

- Dengue RDTs

  The purpose of the retrospective study was to evaluate the effectiveness of a rapid diagnostic test, Panbio Dengue Duo Cassette (Inverness, Australia), Bio-Rad Dengue NS1 AG STRIP, Dengue virus-PCR assay were considered as reference assay in this work. (Table 1)

- Reverse transcriptase PCR (RT-PCR)

  RT-PCR was used to be a reference assay.

Results:

The estimated NS1 Antigen sensitivity and specificity of the reference assay were 83% and 99%, respectively (Table 1). The overall sensitivity and specificity of the NS1 antigen and IgM antibody was perfect. Sensitivity, specificity, PPV, NPV and prevalence were 83%, 93%, 87%, 64% and 36%, respectively (Table 2).

Results:

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Conclusion:

The combination of NS1, and IgM rapid diagnostic tests could be used on admission to rule out dengue infection with a high level of accuracy (PPV 87%). Moreover, evaluation of rapid diagnostic tests for dengue infection should include the use of appropriate statistical models.

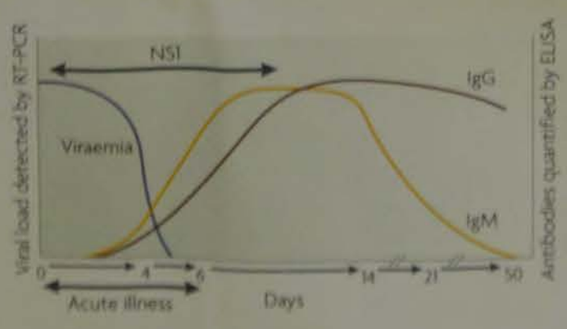

Fig 1 Immune response to dengue infection
An infected person experiences the acute symptoms of dengue when there is a high level of the virus in the bloodstream. As the immune response fights the dengue infection, the person's B cells begin producing IgM and IgG antibodies that are released in the blood and lymph fluid, where they recognize and neutralize the dengue virus and viral molecules such as the dengue NS1 protein. The immune response eliminates the virus, leading to recovery.
© 2010 Nature Publishing Group, Guzman, M. G. et al. Dengue: A continuing global threat. Nature Reviews Microbiology 8, S7–S16 (2010).

Table 1 The estimated NS1 Antigen sensitivity and specificity of the reference assay.

	Sensitivity	Specificity	PPV*	NPV*	prevalence
NS1 antigen test	83%	99%	0.97	0.64	0.36

*PPV, positive predictive value

* NPV, negative predictive value

Table 2 The overall sensitivity and specificity of the NS1 antigen and IgM antibody.

	Sensitivity	Specificity	PPV*	NPV*	prevalence
NS1 antigen test and IgM antibody	83%	93%	0.87	0.64	0.36

References

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ASSESMENT OF ANTHROPOMET
WITH ATHEROGENIC INDICES
MELLITUS PA
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Service, Nigeria National Petroleum c

RNATIONAL FEDERATION OF BIOMEDICAL LABORATOR

INTRODUCTION

Mellitus is one of the Public health concern in Sub Sahara Africa due to
en it exerts on family and governmental finance is inimical to the develo
disease due to poor health facilities and inadequate prognostic index to
any patients. One of these major complication is cardiovascular disease

METHODOLOGY

arch was design to assess the effect of biophysical parameters/ant
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ion Medical Center Abuja. One hundred and forty-eight males (148) a
l were used as control Semi-auto mated analyzer were used to measur
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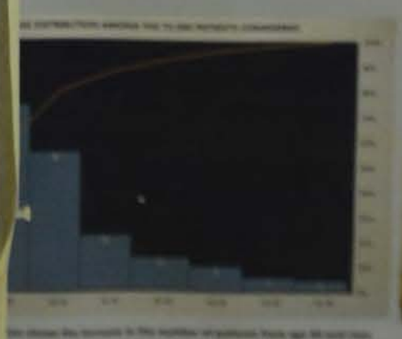
RESULT

Tableone: Shows the biophysical characteristic of the patients and control

sical	T2 DM	Control	P Value
	N=246	N=100	
(m)	1.71±0.053	1.69±0.045	P<0.0001
(Kg)	80±11	75±10	P< 0.0001
g/ m²)	28±4	26±3	P<0.01
: BP(mmHg)	131±12	110±6	P<0.001
ic BP(mmHg)	86±10	69±6	P<0.0001

able three : Shows various cardiovascular risk index in both patients and control.

	T2 DM	Control	P Value
	N=246	n=100	
	0.35±0.28	0.36±0.16	p>0.05 (p<0.001 in levenes T
	3.30±1.7	2.7±1.0	P=0002
c	16.4±4.2	16.8±2.5	P>0.05
C	25.8±7.6	29±7.8	P<0.001
LDL-C	46.5±27.6	52.6± 23	P< 0.04
iastolic	1.52±0.15	1.80±0.13	P<0.001



CONCLUSION

ely. There are different pattern of risk when compare age range ,BMI
ric coefficient(AC) and atherogenic index of plasma(AIP), anthropometry
ric patients in T2 DM patients as well as their prognostic index

REFERENCES

ACKNOWLEDGMENT

Public Health

PI-10

Point of Care Testing can contribute to Universal Health Coverage

Potentialities of POCT as a break-through for conquering barriers on the access to quality testing through the experience in Zambia

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Bureau of International Health Cooperation, National Center for Global Health and Medicine(1),
Department of Clinical Care and Diagnostic Services, Ministry of Zambia(2)

Background:
Universal Health Coverage/UHC is described as all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship by World Health Organization. Diagnosis based on quality testing is one of core health services.
In Zambia, Antiretroviral therapy/ART for people with HIV was expanding and ART related tests mainly consist of Complete Blood Count (especially Hemoglobin), CD4 count and Chemistry test (ALT and Creatinine) were conducted. With the expansion of ART into rural areas, the testing-services confronted many difficulties. The details for those factors causing the difficulties were investigated.

Methods:
Descriptive method was used by checking tested numbers of CBC, CD4, ALT, Creatinine and the availableness of conventional analyzers for those tests in four laboratories in four districts in 2012 and 2013 in Zambia. Also the used laboratory commodity order forms and problem records were checked.

Results:
Tested total number of CBC, CD4, ALT, and Creatinine in all 4 laboratories for 2 years was 26901, 23244, 9904 and 12888 respectively. Total number of month in which analyzers were available and used for CBC, CD4, ALT, and Creatinine in all 4 laboratories for 2 years was 96, 95, 64 and 65 respectively. Chemistry tests had more difficulties.

	Complete Blood Count	CD4 Count	Chemistry ALT	Chemistry Creatinine
Month Machine used among 24momths	96	95	64	65
Total Number testd among 24momths	26,901	23,244	9,904	12,888

Complete Blood Count	C Urban Health Center	M District Hospital	K District Hospital	M Rural Health Center
Month Machine used among 24momths	24	24	24	24
Total Number tested among 24momths	1,872	8,137	14,037	2,855

CD4 Count	C Urban Health Center	M District Hospital	K District Hospital	M Rural Health Center
Month Machine used among 24momths	23	24	24	24
Total Number tested among 24momths	693	10,001	9,660	2,890

Chemistry ALT	C Urban Health Center	M District Hospital	K District Hospital	M Rural Health Center
Month Machine used among 24momths	10	22	23	9
Total Number tested among 24momths	659	1,259	7,377	609

Chemistry Creatinine	C Urban Health Center	M District Hospital	K District Hospital	M Rural Health Center
Month Machine used among 24momths	10	24	22	9
Total Number tested among 24momths	684	2,352	8,712	1,140




Conclusion:
Erratic supplies of consumables and electricity, requirement of many types of consumables for one test (e.g. ALT or Creatinine), slow vender's responses and inadequate preventive maintenance badly influenced the implementation of chemistry tests. One of solutions might be the usage of battery-functional POCT devices which are durable, easy to use and maintain, have proper price with control chips or reagents and don't require many consumables including water. Such POCT can contribute to UHC by expanding the coverage of indispensable tests.

Factors Affecting Chemistry Tests by the usage of conventional chemistry analyzers

- Erratic electricity supply
- De-ionized water required
- Vulnerable to dust and improper room temperature
  - →Enzyme reactions inside the analyzers
- Storing calibrators, controls and reagents between 2-8℃
- Fine equipment and complicated structure
- Need of deep knowledge on Quality control
- Need of basic competency of manipulating computer
- Erratic supply of necessary commodities
- Variety of commodities for conducting just one test (e.g. Creatinine tests)

For conducting Creatinine test by using conventional chemistry analyzers

- Calibrator
- Controls(Normal and Pathological)
- Creatinine reagent
- De-protenizer
- Sample cup
- Control cup
- + Electricity, Pure (De ionized) water, Micropipette, proper room temperature and Well trained Lab staff

World Health Organization's ASSURED criteria of ideal characteristics for a point-of-care test in resource-limited settings ⇒**ASSURED**
Affordable
Sensitive (few false-negatives)
Specific (few false-positives)
User-friendly (simple to perform and requiring minimal training)
Rapid (results within 30mins) and **R**obust (not require refrigerated storage)
Equipment-free
Delivered to those who need it

From the perspective of Universal Health Coverage, ASSURED with ICT connectivity, water free, battery functional POCT devices might be a breakthrough for providing quality and equitable laboratory services at the health centers in the remoted areas in Africa as mobile phone was a breakthrough to Universal Communication Coverage for people in the remoted areas in Africa.

Public Health

PI-11

Public Health

PI-11

ASSESMENT OF ANTHROPOMETRIC DATA CORRELATION WITH ATHEROGENIC INDICES IN TYPE 2 DIABETES MELLITUS PATIENTS

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INTRODUCTION

Diabetes Mellitus is one of the Public health concern in Sub Sahara Africa due to its increase among middle age and aged population. The burden it exerts on family and governmental finance is inimical to the development of the nation. Many complications associated with the disease due to poor health facilities and inadequate prognostic index to identify the likelihood of complication has been the bane of many patients. One of these major complication is cardiovascular disease.

METHODOLOGY

This research was design to assess the effect of biophysical parameters/anthropometric data spread and its correlation with atherogenic indices among two hundred and forty-six (246) Type II diabetes Mellitus patients in Nigeria National Petroleum Corporation Medical Center Abuja. One hundred and forty-eight males (148) and ninety-eight females (98).One hundred healthy individual were used as control Semi-auto mated analyzer were used to measured biochemical (lipid profile, glycated heamoglobin, Fasting blood sugar) and standardized Clinical instruments were used to measured anthropometric data (blood pressure, height, weight, etc).

RESULT

Tableone: Shows the biophysical characteristic of the patients and control

Biophysical	T2 DM	Control	P Value
	N=246	N=100	
Height(m)	1.71±0.053	1.69±0.045	P<0.0001
Weight(Kg)	80±11	75±10	P< 0.0001
BMI (Kg/ m²)	28±4	26±3	P<0.01
Systolic BP(mmHg)	131±12	110±6	P<0.001
Diastolic BP(mmHg)	86±10	69±6	P<0.0001

Table two: shows the biochemical values both for the diabetic and the control subject

Variables	T2 DM	Control	P Value
	N=246	n=100	
FBS (mg/dl)	137±58	88±12	P<0.0001
HBA1c(%)	8.3±2.2	5.3±0.45	P<0.001
TC (mg/dl)	191±42	176±17	P< 0.001
HDL-C(mg/dl)	48±13	50±14	P>0.05
LDL-C (mg/dl)	118±39	103±20	P<0.0001
TG (mg/dl)	118±82	115±36	P<0.05
VLDL-C (mg/dl)	24±14	23±5	P<0.05

FBS= Fasting blood sugar, HBAIc = Glycated heamoglobin, TC= Total cholesterol, HDL-C =High density lipoprotein cholesterol, LDL-C= Low density lipoprotein cholesterol, Triglycerides, VLDL-C = Very low density lipoprotein cholesterol.

Table three : Shows various cardiovascular risk index in both patients and control.

Variables	T2 DM	Control	P Value
	N=246	n=100	
AIP	0.35±0.28	0.36±0.16	p>0.05 (p<0.001 in levenes .T
AC	3.30±1.7	2.7±1.0	P<0002
FBS/HBA1c	16.4±4.2	16.8±2.5	P>0.05
%HDL-C/TC	25.8±7.6	29±7.8	P<0.001
% HDL-C: LDL-C	46.5±27.6	52.6± 23	P< 0.04
Systolic/Diastolic	1.52±0.15	1.60±0.13	P<0.001

AIP –Atherogenic Index of Plasma, AC- Atherogenic Coefficient.
There are evidence cardiovascular risk in type 2 diabetes mellitus patients considered in these study from the table above with new significant evidence from systolic and diastolic ratio.

Table four: Shows the risk of coronary heart disease in difference classes of Basal metabolic index.

	RISK OF CORONARY HEART DISEASE			
BMI	NORMAL	MILD	MODERATE	DANGEROUS
NORMAL(<27)	31	23	6	3
OVERWEIGHT(27-30)	62	48	14	10
OBESE(31-39)	17	18	8	0
MORBID(>39)	3	2	0	0
TOTAL	113	92	28	13

Table five: Shows the risk of cardiovascular disease in difference classes of age range.

	RISK OF CARDIOVASCULAR DISEASE				
AGE RANGE	NORMAL	MILD	MODERATE	DANGEROUS	TOT.
25-30	1	3	1	0	
31-35	2	1	1	0	
36-40	5	4	2	1	
41-45	7	10	1	2	
46-50	25	21	3	1	
51-55	44	19	12	4	
56-60	27	30	7	3	67
61-65	2	4	1	2	9
TOTAL	113	92	28	13	246

In table five and figure 2,the risk of cardiovascular disease is varies between age group with mild risk highest among ages 56-60 years, moderate and dangerous risk among ages 51-55 years. Age in these study prove to be one of the contributory factor to cardiovascular complication in type 2 diabetes patients. Especially among the women with associated menopausal syndrome compare to men.

Figure 1: shows that increase in basal metabolic index is not an independent risk factor for developing cardiovascular disease in type 2 diabetes patients considered though very important. When the data above were subjected to statistical analysis with adjustment of numbers

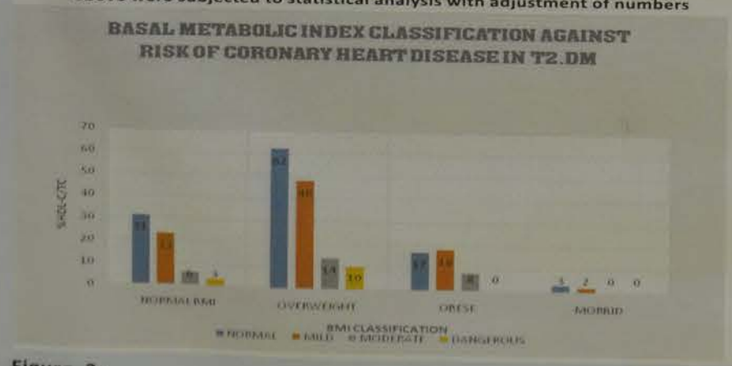
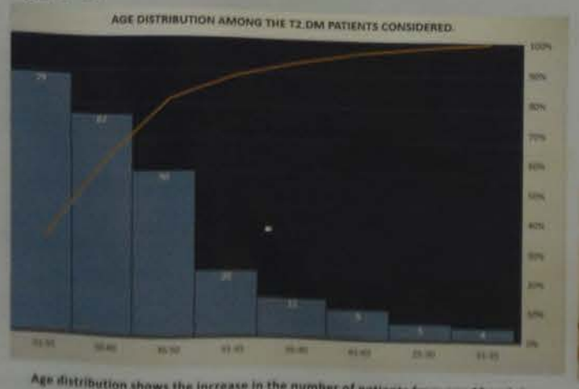


Figure 3:



Age distribution shows the increase in the number of patients from age 40 and rises systematically till 60 years before declining probably due to death or other socio-cultural factor. The rise in the prevalence of the disease with age is a major concern. Staff of this institution and other group of same socio-ethnic background should watch their diet, medical check up as age increases.

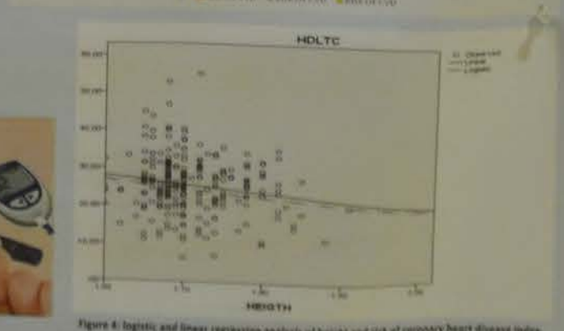


Figure 4: logistic and linear regression analysis of height and risk of coronary heart disease index. There is negative correlation between height and risk of coronary heart disease.(CHD)(HDL-C/TC%) P<0.035,(NDL-C/LDL-C)P<0.025,positive correlation between age and weight P<0.036,age and systolic blood pressure P<0.005,systolic-diastolic ratio P<0.003.Male patients tend to have significant reduction in HDL-C compare to female P<0.007,lower risk of CHD compare to female P<0.013.However, the female shows higher BMI than male P<0.037.

CONCLUSION

Conclusively, There are different pattern of risk when compare age range ,BMI classification with other atherogenic index like Atherogenic coefficient(AC) and atherogenic index of plasma(AIP). anthropometric data and vascular status are vital in predicting atherogenic patients in T2,DM patients as well as their prognostic index.

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Public Health

PI-12

Analyze the Health Conditions of 65-and-Older Senior Citizens in Taipei City

Benefits of the Elderly Physical Checkup Welfare

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Introduction

Senior citizens who are older than 65 years accounted for 14.4% of Taipei City population in 2015, which were far more than the aging society indicator set by the World Health Organization (7% elderly citizens of the total population). In fact, developed countries have faced the phenomenon of aged population worldwide. Therefore, numerous health issues of the elderly have emerged from the aging population. Over the past decade, as high as 58% growth on medical expenses came from elderly population. In 2015, the Taipei City government had spent over 40 million NTDs on the elderly physical checkup, which highlighted the importance of Preventive Medicine and elderly health issue. The most common problems of the elderly health in Taiwan were the "3-highs", i.e., hyperglycemia, hyperlipidemia and hypertension, and colorectal cancer, which ranked first of the cancer death. The aim of this study was to use the results of elderly physical checkup to evaluate the benefit of providing these services to seniors in terms of heath care issues.

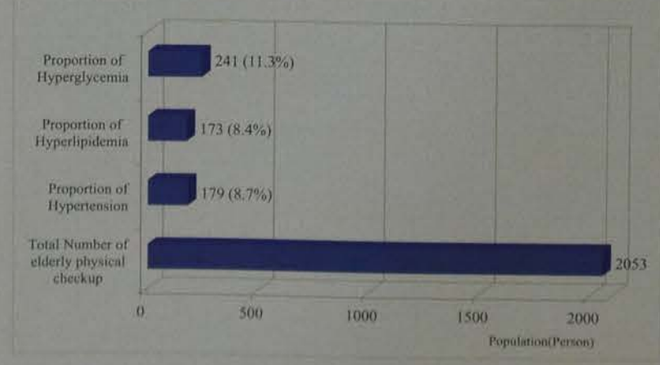
Materials & Methods

In this study, a total of 2,053 elderly physical checkup reports at our hospital in 2015 were analyzed. The male:female ratio was 1:1, and their mean age was 76.5 years old (range: 65-100 years). The physical checkup items included: complete blood count (CBC), biochemistry, urine routine, and stool OB (EIA). Based on the standards of metabolic syndrome defined by the Health Promotion Administration, Ministry of Health and Welfare, R.O.C., the cut-off values for the 3-highs (hyperglycemia, hyperlipidemia and hypertension) were fasting blood sugar≧126 mg/dL, triglyceride≧200 mg/dL and blood pressure≧140/90 mmHg.

Results

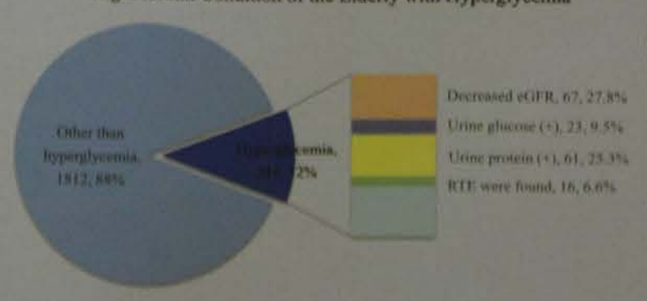
Hyperglycemia, hyperlipidemia, and hypertension were noted in 241 (11.3%), 173 (8.4%), and 179 (8.7%) elders in the physical checkup. (Fig.1)

Fig.1 Proportion of Three-Highs Disease in Senior Citizens who took the elderly physical checkup at our hospital in 2015



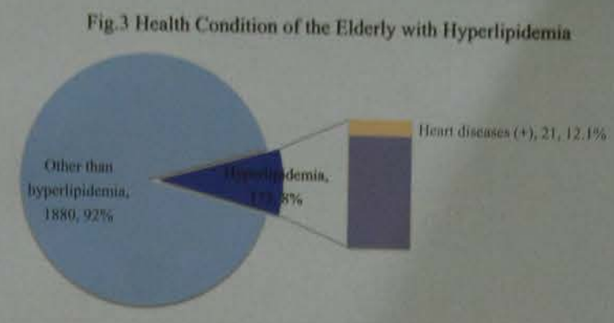
Of the elders who had hyperglycemia, 67 (27.8%) had decreased eGFR (<60), 23 (9.5%) had urine glucose, 61 (25.3%) had urine protein, and 16 (6.6%) had increased RTE in urine. The latter findings indicated that their blood glucose control were poor. (Fig.2)

Fig.2 Health Condition of the Elderly with Hyperglycemia



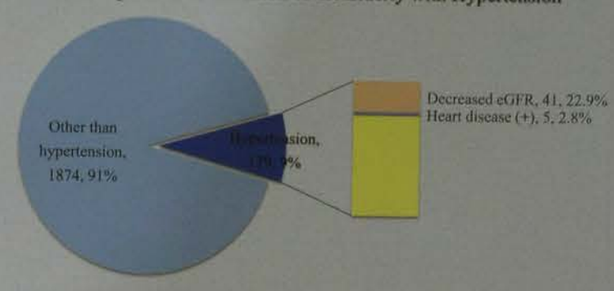
Of the elders who had hyperlipidemia, 21 (12.1%) of them had heart diseases. (Fig.3)

Fig.3 Health Condition of the Elderly with Hyperlipidemia



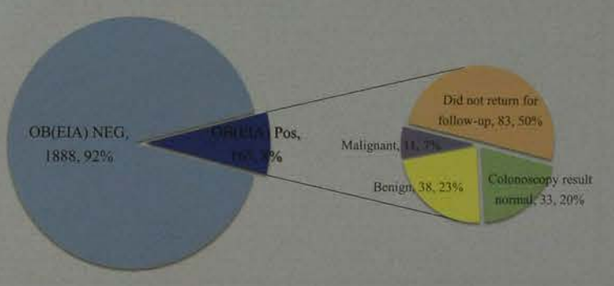
Of those who had hypertension, 41 (22.9%) of them had decreased eGFR (<60) indicating the presence of chronic kidney disease. (Fig.4)

Fig.4 Health Condition of the Elderly with Hypertension



Positive stool OB (EIA) tests were noted in 165 (17.3%) samples. Eighty-three of these elders came back to our hospital for colonoscopic evaluation, and the results were as follows: normal/hemorrhoids 33 (39.8%), benign polyps 38 (45.8%) and malignant neoplasm 11 (13.3%). (Fig.5)

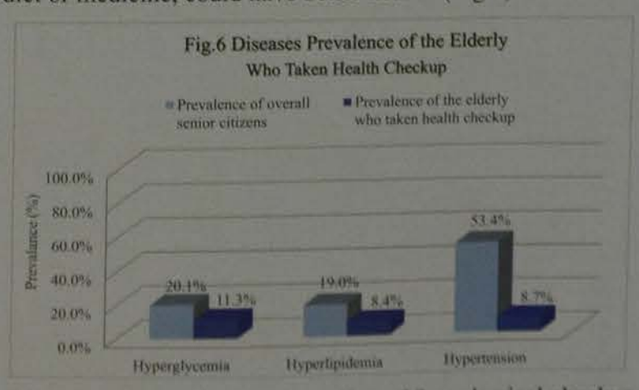
Fig.5 Stool OB (EIA) Examination Results Analysis



Discussion

The prevalences of hyperglycemia (11.3%), hyperlipidemia (8.4%), and hypertension (8.7%) (3-highs) in this physical checkup population were much lower than those reported from the Health Promotion Administration, Ministry of Health and Welfare, R.O.C. for the Taiwan senior population, which were 20.1%, 19.0% and 53.4%, respectively. These results could reflect elders who care more about their physical conditions, e.g., taking physical checkup or taking appropriate diet or medicine, could have better health. (Fig.6)

Fig.6 Diseases Prevalence of the Elderly Who Taken Health Checkup



These data also supported the policy of free physical checkup for the seniors (pay by the government). As the more healthy senior citizens in our population, the less expenses would be spent for their medical bills. Promotion of senior physical checkup and making the process more friendly and more assessable could further enhance this effect.

Conclusion

Elderly physical checkup welfare of Taipei City not only helps monitor 3-highs of the elderly but also helps screen out colorectal cancer, which achieved the goal of preventive medicine and saved on subsequent medical and care expenses.

Public Health

PI-15

90357 Peptidylarginine deiminase expression - an important factor in type 1 and type 2 diabetes

UPPSALA UNIVERSITET

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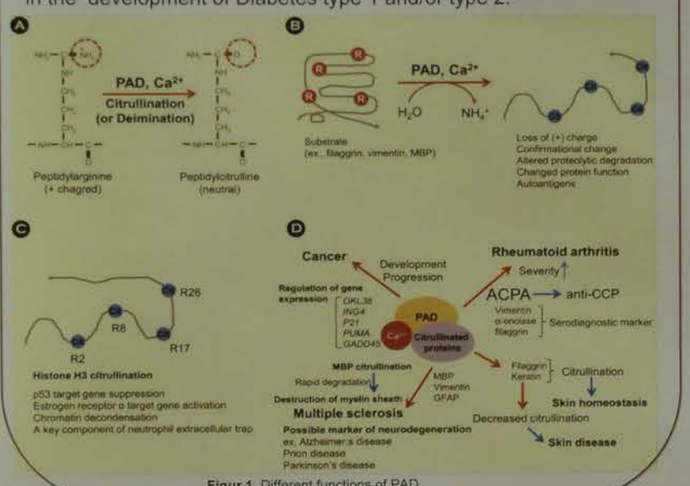
Introduction: Peptidylarginine deiminase, PAD, is a group of enzymes that converts arginine to citrulline. This process is also called citrullination and can lead to an alteration of the structure and function of several proteins. The PAD family consists of PAD 1, PAD 2, PAD 3 and PAD 4 which are expressed in different cells and tissues and have different functions. In Rheumatoid arthritis, RA, citrulline is measured as a routine diagnostic marker showing elevated levels of anti-CCP. Recent studies have shown that PADs also block cancer progression and may have an effect on rheumatoid factor and citrulline which in turn may play a major role in the development of Diabetes type 1 and/or type 2.



Figur 1. Different functions of PAD

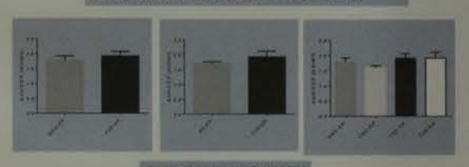
Materials and methods: GK rat, normal rat, mouse and human tissue samples from pancreas was used in the study. Proteinexpression was analyzed using immunohistochemical staining för anti PAD-1, anti PAD-2, anti PAD-3 and anti PAD-4 as well as P53, Vimentin, CD34 anti CCP and CD31. Twenty patients with diabetes type 1, twenty patients with diabetes type 2 and corresponding control groups were analyzed for Rheumafactor,C1q factor and glucose level using ELISA.

Table 1. Proteinexpression in different species

Pankreas	PAD 1 islets	PAD 2 islets	PAD 3 islets	Citrullin islets	Vimentin islets	P53	CD 34 islets	CD 31 islets
Rat (normal kontroll)	1	1	1	1	2	1	2	2
GK rat	3	2	2	1	2	0		
Human islets	3	3	3	0		0		
Transplantations råtta	0	1	0		2	0		
Mouse (normal kontroll)	2	1	1	1		1		

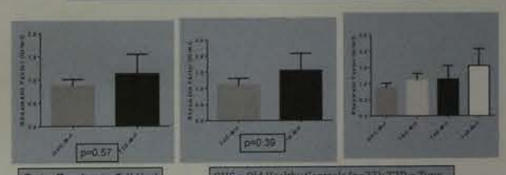
Results: We found that the expression of PAD-1, PAD-2 and PAD-3 was higher in GK rat compared to normal rat and that the glucose level was elevated in Langerhans islets when blocking PAD with Cloramidine. Also Rheuma factor and C1q complement factor in patients with Diabetes type 1 and type 2 showed a minor difference between the groups compared to the control groups.

Anti-Citrullinated Antibodies



Cut-off value = 7 AU/ml

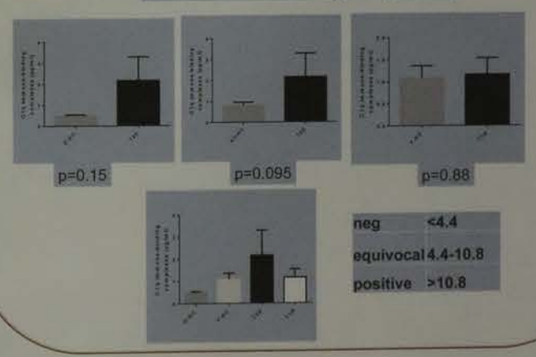
Rheumatic Factor



Cut-off value = 5 IU/ml

OHC = Old Healthy Controls (n=23); T2D = Type 2 Diabetes (n=24)
YHC = Young Healthy Contros (n=27); T1D = Type 1 Diabetes (n=21)
All values are given as means ± SEM

C1q Immune-binding Complexes



neg	<4.4
equivocal	4.4-10.8
positive	>10.8

Conclusion: In conclusion PADs may be an important factor in the inflammation process and therefore may play a major role in the development of diabetes due to the chronic inflammation state, while rheumafactor and C1q factor may be involved in the development of diabetes but more as a background factor and not a major contributor.

D-2 D-2

Public Health

PI-16

Aiming at provision of quality health checkup services in a developing country

- Lessons learnt from Cambodia -

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Background

The diseases structure in Cambodia is changing with the increase in lifestyle related diseases due to the economic growth[1]. Because of low credibility on the quality of domestic medical services, many Cambodian people travel to neighboring countries for reliable medical services. Therefore, it is important to respond the unmet medical needs of the people living in Cambodia. A project called "UHS/JATA Medical diagnostic Center" established by Japan Anti-Tuberculosis Association (JATA) in collaboration with University of Health Sciences, Cambodia (UHS) could contribute to their needs through the provision of quality health checkup and clinical diagnosis services.

Justification

Cambodia faces a double burden of communicable and non-communicable disease (NCD). While communicable diseases such as HIV/AIDS, tuberculosis and malaria are still major cause of death, NCD accounts for 46% of all deaths in Cambodia. Regardless of income level, people have a risk such as diabetes and high blood pressure, caused by increasing intake of junk or fast food and other low-cost/high-calorie foodstuffs, in addition to communicable diseases. The prevention of disease, early diagnosis, and early treatment through health checkup are desirable.

The accessibility of medical services is another concern. The people with middle to high income tend to travel abroad such as Thailand and Singapore, seeking for high quality medical services due to lack of reliable medical services in Cambodia. The number reaches approximately 240,000 every year and 25% of them travels for the purpose of health check-up, which means that the Cambodian economy misses out the value of some 11 million US dollar[3] to neighboring countries. Therefore, the quality medical infrastructure with reliable services needs to be established in Cambodia.

The third major issue is occupational health. Although the minimum wage has gradually increased due to the economy growth, the implementation on health protection of workers is still lagging behind. In 2014, the International Labor Organization (ILO) study in Cambodia found that 43% of garment factory workers suffered from anemia[4]. Other study conducted by Cambodian Anti-Tuberculosis Association (CATA) reported 14 TB patients among 146 workers with TB symptoms in 14 factories. These results are just a tip of an iceberg. Therefore, to provide a medical care for the labor force contributes to the economic growth and social stability in Cambodia, let alone promotion of health.

Intervention

In 2015, JATA started to discuss business plan on health checkup services with UHS as a business partner. The Memorandum of Understanding (MoU) to establish "UHS/JATA Medical Diagnostic Center" was signed between the two parties in January 2016 and it specified that the project consists of five components, health check-up at center, mobile health check-up services, a sample collection and laboratory services, trainings & education and researches & study in order to provide high quality medical care, services and examinations in Cambodia.

A series of meetings were conducted regarding business plan, staff recruitment, material and equipment, building renovations, and trainings.

The project conducted the study tour in Japan for UHS president and management staff, aiming at better understanding of quality medical care and services in Japan.

All quality laboratory and diagnostic materials and equipment were procured in Japan and Cambodia.

The renovation of the center has been in progress.

Five components of "UHS/JATA Medical Diagnostic Center"

1. To provide health checkup services for client coming to a center (passive case finding)
2. To provide mobile health checkup services that visit clients (active case finding)
3. To provide sample collection and examination services
4. To provide medical training and education
5. To conduct research and study

Timeline of project:

Lessons learnt

As a result, it became clear that decision making in a developing country takes time, and it is vital to secure enough time in the schedule. The marketing of Japanese medical equipment in developing countries has more challenges. In particular, we learned there were a lot of challenges in cost, maintenance and operation of Japanese equipment.

Conclusions

In order to expand the Japanese medical services in developing countries, both plan reflecting the current situations and an enough finance to support the plan are required.

Acknowledgement

We express cordial gratitude to the colleagues of UHS/JATA Medical Diagnostic Center as well as UHS for their kind and sincere collaboration and support.

This project was funded in part by grants from the Medical Excellence JAPAN (MEJ), Ministry of Economy, Trade and Industry (METI) JAPAN.

References

1. WHO (World Health Organization): *http://www.who.int/mediacentre/factsheets/fs310/en/index1.html*
2. IHME (Institute for Health Metrics and Evaluation): *http://www.healthdata.org/notice-tool-migration*
3. Report on preparatory investigation for HDDR project in Cambodia Feb 2012
4. Press release, 29 September 2014, ILO

We have no potential conflicts of interest in relation to this presentation.

Public Health

PI-17

Detection of Hepatitis A Virus Strains From Raw Wastewater and Clinical Specimens

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ABSTRACT

We defined the occurrence of human Hepatitis A Virus (HAV) in urban raw wastewater in Yokohama City, Japan. In total, 127 samples were tested using RT-Nested PCR for 5 years and HAV strains were detected in 15 (11.8%). The epidemic of HAV infections occurred twice. Correlation with clinical specimens suggests that HAV existing has continued for having the potential to cause a wide range of HAV infection.

INTRODUCTION

What's HAV ?

Member of the genus hepatovirus within the family picornaviridae
The 27-32 nm non-enveloped, icosahedral particles
A 7.5 kb single-stranded positive-sense RNA genome
Having 6 genotype, and 1, 2, and 3 divided into subtype A and B
For long periods, excreted in faces, surviving in environment

Thereby

What's Hepatitis A ?

One of the inflammation of liver caused by virus, HAV
Transmission by the fecal-oral route mainly
Infected by ingestion of contaminated food and water
The long median incubation period (15-50 days)
The existence of asymptomatic young children and adult patients in some case

Because of these characteristic of HAV, there is ***difficulty*** in searching for source of infection.

AIM

Then, we think 'is there a possibility of existence of HAV in environment ?'

⇒ **Conducting HAV detection from raw wastewater**
⇒ **Sequence homology analysis of HAV gene derived from environment and clinical samples by molecular epidemiology.**

Is there any utility of the detection of HAV from environment?

METHODS

Concentration
RNA extraction
RT-Nested PCR
Sequencing

Primer:VP1/2A
(2009/4-2011/3)
1st : HAV+2799/-3296 (498bp)
2nd : HAV+2907/-3186 (280bp)

Primer:JCT-2F/1R-A/2R
(2011/4-2015/3)
1st : 2F/1R-A:+2784/-3451 (668bp)
2nd : 2F/2R:+2784/-3398 (615bp)

Sequence Alignment
Phylogenetic tree construction

Phylogenetic analysis
⇒ MEGA6
(http://www.megasoftware.net/)

Molecular epidemiologic analysis

MATERIALS

Environment samples

- Two wastewater Treatment Plants
- Covered 25% in Yokohama City (3,732,609 Population according to the national census 2015)
- Once a month sampling (50 mL)
- 127 samples for 5 years (Apr 2009- Mar 2014)

Clinical Samples (serum or feces)

- Sequence determinate specimens in Yokohama City (27 isolates in 5 years)
- Sequence determinate HAV strains during the epidemic in Japan (2010 and 2014)
- Reference HAV strains from official provided homepages

NUMBER OF CASES OF HAV INFECTION

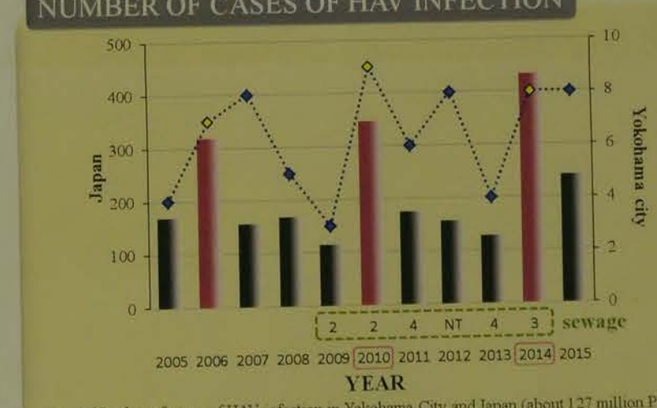

Fig. 1 Number of cases of HAV infection in Yokohama City and Japan (about 127 million Population according to the national census 2015) And number of cases of HAV detected from environment

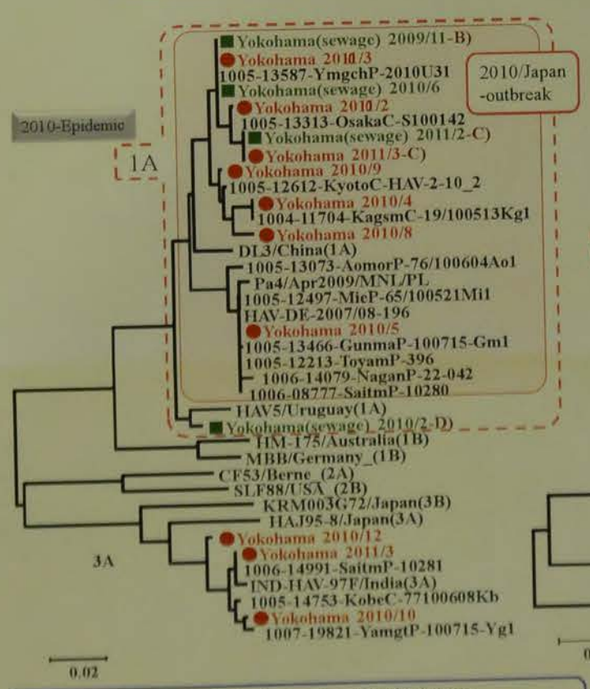

Fig. 2 Phylogenetic tree displaying the genetic relationship between environmental and clinical HAV strains in 2010-Epidemic
Divided into two categories in Yokohama City
1. High level of homology with clinical strains in Yokohama City and Japan epidemic in 2010 (3 strains)
2. No relationship with another clinical strains (1 strain)
(Clinical samples NT before 2010-Epidemic)

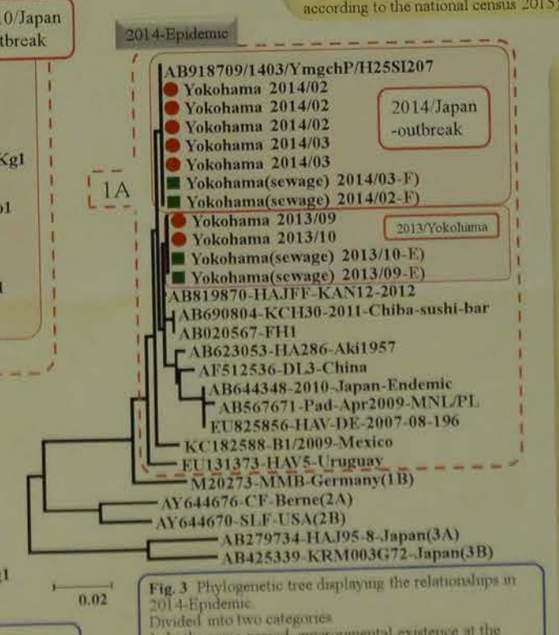

Fig. 3 Phylogenetic tree displaying the relationships in 2014-Epidemic
Divided into two categories
1. In the same period, environmental existence at the same level of homology with clinical strains (2 strains)
2. Environmental existence of the same level of homology with 2014-epidemic strain (2 strains)

RESULTS&DISCUSSION

2009/4-2011/3 (2010-Epidemic)

A) Of 55 samples examined, 4 strains were detected (all genotype 1A).
B) The epidemic strain had been detected in environment before a few months. This indicates that there were the strains already existed secretly.
C) The end of epidemic, the strains were detected both in environment and patient. Therefore, HAV epidemic and excretion in feces continued after a year.
D) Though unrelated strain was detected, there were no similar strain from clinical cases. This result suggests the existence of pre-symptomatic and asymptomatic patients.

2011/4-2014/3 (2014-Epidemic)

E) The same strains were detected from in environment and patients. In that period, a few epidemic might occurred in limited area.
F) 2014-epidemic strains were detected in environment and patients at the same time. This is the first result of complete concordance in endemic period.

CONCLUSION

In Japan, Hepatitis A is past disease and just imported from epidemic area. But Japanese raw wastewater contains HAV according to the results of this study. Continued research is important to assume risk facing invariably a prevalence crisis by potential HAV existence.

Ref.)

- Ishii K et al . J Clin Virol . 2012 Mar;53(3):219-24. Epidemiological and genetic analyses of a diffuse outbreak of hepatitis A in Japan, 2010.
- Ishii K et al . Vaccine . 2015 Nov 9;33(45):6029-36. Epidemiological and genetic analysis of a 2014 outbreak of hepatitis A in Japan.

Acknowledgement
Thank for supporting by our colleagues and Environmental Planning Bureau, Yokohama-shi, collecting of the samples.

The Number of HAV in YOKOHAMA CITY
During an Investigation Period

Year	samples in environment	Detected strains	Genotype	Clinical cases	Genotype	Primer
2009	55	4	1A	55	1A (27)	VP1/2A 498bp
2010					3A (1)	
2011	24	3	1A (1)	3	1A (2)	
			3A (1)		3A (1)	
2013	24	4	1A	3	1A	2CF/2R 615bp
2014	35	3	1A (2)	3	1A (2)	615bp
			3A (1)		3A (1)	
Total	127	15		27		

Public Health

PI-18

Echo-cardiography group examination in the tsunami-affected areas (3 years)

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Sadao Shimizu[6] Takashi HIROBE[7] Hiroyuki HAYASHI[8]

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Introduction

Increased cardiovascular disease has been reported after catastrophe occurs. However, annual change of cardiovascular disease in the affected residents is unknown.
We conducted echocardiographic examination intended for the residents of temporary housing estates for the three consecutive year, we were followed over time change of heart disease in tsunami victims.

temporary housing

Method

【Subjects】
The subjects were the Tsunami-affected residents who lived in Watari-gun, Miyagi (Watari-cho, Yamamoto-cho)

【Setting】
Echocardiography screening was undertaken in Watari-gun with 20 times in three years (13 places). Each screening team that visited a venue comprised 1-3 physicians (i.e. cardiologist, thoracic surgeon or neurologist) familiar with Echocardiography in clinical practice and up to 20 technicians.

【Study design】

・This was a descriptive study comprising a retrospective analysis of data collected during a mobile echocardiography screening program following a major natural disaster.

・Exclusion: Omission cased of the interview item and re-testee.

・This investigation was conducted according to the principles expressed in the Declaration of Helsinki, and the study was approved by the Regional Ethics Committee and bureau of protection of personal privacy.

【Study population】

・The subjects were the Tsunami-affected residents who lived in Watari-gun (Watari-cho, Yamamoto-cho), Miyagi prefecture.
・Subjects and elapsed time
1) disaster 18 months, 207 subjects (Male45, Female162, Age70.2±9.9yrs.)
2) disaster 30 months, 125 subjects (Male37, Female88, Age71.4±9.9yrs.)
3) disaster 44 months, 121 subjects (Male32, Female89, Age71.2±7.6yrs.)
・Exclusion: Omission case of the interview item, re-testee

【Echocardiography】

・Transthoracic echocradiographic measurements were using visual evaluation methods.
・B mode, two dimensional and Doppler studies were out using portable ultrasonic device. (table1)

(Table 1) Portable ultrasonic device

Company	Headquarters	Device name	Sector probe frequency
Philips Ultrasound	Bothell,USA	CX50	1-5MHz
GE Healthcare UK Ltd.	Buckinghamshire, England	LOGIQ e	1.5-4.0MHz
Hitachi, Ltd.	Tokyo, Japan	Noblus	1-5MHz
Toshiba Medical systems	Tochigi, Japan	Viamo	1.8-4.2MHz

【Positive findings*】

・Atrium- ventricular dilatation
・Vasculature dilatation
・Left ventricular hypertrophy
・Wall motion abnormality
・Left ventricular ejection fraction(<40%)
・Pericardial effusion
・Atrial septal aneurysm
・Aortic valve stenosis
・Aortic valve regurgitation
・Aortic valve calcification
・Aortic valve thickening
・Mitral valve stenosis
・Mitral valve regurgitation
・Mitral valve calcific
・Mitral valve prolapse
・Tricuspid valve regurgitation
・Pulmonary valve regurgitation

＊ including trivial findings and mild

【Laboratory examination and collection of data】

・The serum N-terminal pro-brain natriuretic peptide (NT-proBNP) levels were measured by using a commercially available immnochromatography assay (COBAS 232h; Roche Diagnostics Limited, Tokyo, Japan).
・Clinical data, including age, gender, and body mass index were obtained from patient interviews.

【Statical analysis】

・Continuous variables are reported as mean (standard deviation, SD), and categorical variables are reported as frequencies and percentages.
・Continuous variables were compared between the groups with and without Echocardiography positive Positive findings table2 using Student's t-test, and categorical variables were compared using the chi-squared test.
・To identify variables associated with cardiovascular risk, multivariate analysis was performed using logistic regression analysis with all variables employed and the presence of cardiovascular as an independent variable.
・Forward stepwise selection was used to screen for significance among these variables and to calculate their P value and odds ratio(OR).
・A forced entry method was used to estimate the OR of all variables.
・All p-value of <0.05 was considered to be statistically significant.
・All statistical analyses were performed with EZR (Saitama Medical Center, Jichi Medical University, Saitama, Japan), which is a graphical user interface f or R (The R Foundation for Statistical Computing, Vienna, Austria). More precisely, it is a modified version of R der(version 2.1-7) designed to add statistical functions frequently used in biostatistics.

・This work supported by JSPS KAKENHI(Grant-in-Aid for Scientific Research:C) Grant Number 24590685.

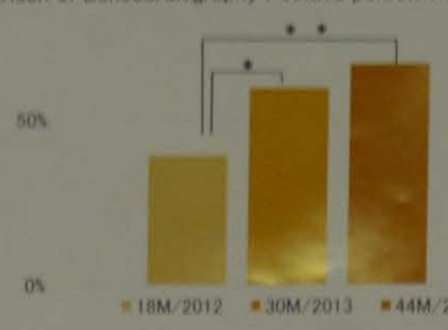
Result 1

・Positive group of 2014 and 2013 were significantly increased than 2012 (<0.001).
・Risk factors for 2012 were the exercise habits and age and pulse pressure.
・Risk factors for 2013 were the temporary housing residents and systolic blood pressure and pulse pressure.
・Risk factors in 2014 was the only temporary housing residents.
・NT-proBNP abnormal value was reduced the peak in 2013.
・NT-proBNP mean value was reduced the peak in 2012.

＊ The contents of the abstracts have slightly different.

Result 2

【Comparison of Echocardiography Positive person views (Figure)】



＊ 18M/2012 vs 30M/2013 p<0.0001, ＊＊ 18M/2012 vs 44M/2014year p<0.001 Chi-squared test

【Comparison of background in positive group and negative group】

1) disaster 18 months (2012)

	positive group n=87	negative group n=120	p-Value
Age (yrs)	74.3±7.6	67.2±10.4	<0.0001
Male/Female	21/66	24/96	ns
blood pressure			
Systolic blood pressure (mmHg)	139.9±18.1	137.8±18.6	ns
Diastolic blood pressure (mmHg)	81.3±11.7	83.8±12.6	ns
Pulse pressure(mmHg)	58.5±14.5	53.9±13.6	<0.05
Mean blood pressure (mmHg)	100.8±12.4	101.8±13.4	ns
Lifestyle habits			
Smoking n.(%)	6(6.9)	10(8.3)	ns
Exercise habits n.(%)	59(67.8)	62(51.7)	<0.05
Basal disease			
Heart disease n.(%)	28(32.2)	26(21.7)	ns
Diabetes mellitus n.(%)	11(12.6)	12(10)	ns
Hypertension n.(%)	49(56.3)	62(51.7)	ns
Hyperlipidemia n.(%)	28(32.2)	40(33.3)	ns
Environment			
temporary housing residents n.(%)	85(97.7)	114(95)	ns

2) disaster 30 months (2013)

	positive group n=76	negative group n=49	p-Value
Age (yrs)	71.8±10.4	70.9±9.1	ns
Male/Female	23/53	14/35	ns
blood pressure			
Systolic blood pressure (mmHg)	138.5±17.7	130.7±18.0	<0.05
Diastolic blood pressure (mmHg)	79.5±10.9	77.8±12.8	ns
Pulse pressure(mmHg)	58.9±17.1	52.8±13.8	<0.05
Mean blood pressure (mmHg)	99.2±11.0	95.4±13.2	ns
Lifestyle habits			
Smoking n.(%)	7(9.2)	4(8.2)	ns
Exercise habits n.(%)	48(63.2)	33(67.3)	ns
Basal disease			
Heart disease n.(%)	26(34.2)	11(22.4)	ns
Diabetes mellitus n.(%)	11(14.5)	10(20.4)	ns
Hypertension n.(%)	44(57.9)	28(57.1)	ns
Hyperlipidemia n.(%)	37(48.7)	28(57.1)	ns
Environment			
temporary housing residents n.(%)	73(96.1)	41(83.7)	<0.05

3) disaster 44 months (2014)

	positive group n=88	negative group n=33	p-Value
Age (yrs)	71.5±7.7	70.6±7.3	ns
Male/Female	23/65	9/24	ns
blood pressure			
Systolic blood pressure (mmHg)	139.3±18.9	138.6±16.7	ns
Diastolic blood pressure (mmHg)	81.0±12.8	83.1±11.6	ns
Pulse pressure(mmHg)	58.3±16.1	55.4±11.4	ns
Mean blood pressure (mmHg)	100.4±13.0	101.6±12.4	ns
Lifestyle habits			
Smoking n.(%)	8(9.1)	2(6.1)	ns
Exercise habits n.(%)	63(71.6)	19(57.6)	ns
Basal disease			
Heart disease n.(%)	28(31.8)	10(30.3)	ns
Diabetes mellitus n.(%)	13(14.8)	6(18.2)	ns
Hypertension n.(%)	49(55.7)	21(63.6)	ns
Hyperlipidemia n.(%)	49(55.7)	14(42.4)	ns
Environment			
temporary housing residents n.(%)	39(44.3)	11(33.3)	<0.05

【NT-proBNP blood test person year changes】

	2012 n=51	2013 n=26	2014 n=45	p-Value
NT-proBNP abnormal value n.(%)	20(39.2)	15(57.6)	26(56.2)	ns
NT-proBNP Mean Value (pg/ml)	314.7±589.6	383.1±552.5	275.5±360.7	ns
Environment				
temporary housing residents n.(%)	49(96.1)	25(96.2)	16(64.4)	<0.0001

Data are all as mean ± SD or n (%) NT-proBNP abnormal value: 125<(pg/ml)
Chi-squared test, Fisher's exact test, Mann-Whitney U test

Discussion

・Echocardiography minor findings were increased, factors were considered involvement of stress and residential environment.

Mark H,Gerad J M,Emmanuel S. Psychogical Distress as a Risk Factor for Cardiovascular Events.
Journal of American College of Cardiology. 2008 Vol.52,No25,2156-2162

・Changes in NT-proBNP, change of residence was considered stress relief from the temporary housing residence has reduced the risk of heart failure.

Hiroyuki Y, Akiomi Y, Shoji I.Clinical Features of Patients With Decompensated Heart Failure After the Great East Japan Earthquake.
American Journal of Cardiology. 2013;112:94-99

Conclusion

・Cardiovascular disease as a disaster-related disease over time to change, but the peak was considered to be different by the condition.
・Risk factor for cardiac disease were changed from disease factors to the residential environment.
・Echocardiographic screening for victims contributes in preventing the disaster-related death.

Public Health

PI-19

Free testosterone and growth hormone levels and association with depression in apparently healthy men and women

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Introduction

- Several biomarkers were reported to decrease or increase in depression *(Sen et al, 2008[1]; Irmish et al, 2010[2]; Ford & Erlinger, 2004[3]; Isobe et al, 2014[4])*.
- Testosterone is known to decrease in men with depression *(McIntyre et al, 2006[5])* and to be related with aggression *(Archer, 1991[6])*.
- Several studies have suggested that Growth hormone (GH) also has a crucial role in both mental and emotional well-being and in maintaining high energy levels *(Prodam et al, 2012[7])*.
- However, few reports have been published on the relationships between the hormones levels and depression in apparently healthy men and women.

Aims/Objectives

- The purpose of this study was to assess the associations of blood free testosterone and GH with the mental health scores of apparently healthy men and women.

Methods

Participants:
We recruited 88 healthy volunteers (37 men and 51 women, aged 21–63 years) who had no physical signs of disease and were not taking any medications. At entry, all participants provided written informed consent to participate in the study.

Ethical issue:
The study protocol was approved by the ethics committee of the institute of Medicine, University of Tsukuba (2012-No.77)

Questionnaires:
Beck's Depression Inventory (BDI), State-Trait Anxiety Inventories (STAI) 1 and 2 and Brain sex score, measuring the type of thinking – manlike or woman like(Anne Moir & David Jessel, 1992[8]).

Blood hormones:
Peripheral venous blood samples were collected at around 5 PM. Free testosterone serum levels were measured with sandwich-ELISA, using a commercial kit according to the manufacturer's instructions (Cosmic Corporation, Tokyo, Japan). Growth hormone levels were measured by enzyme immunoassay with the AIA-2000 instrument (TOSOH, Tokyo, Japan).

Statistical analysis:
The Pearson product moment correlation was used to determine correlations among the quantitative variables.

Funding:
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Results 1: Distribution

As shown in Figure 1, the distribution of free testosterone for women was highly skewed to the right. The distribution for men was approximately normal. The mean free testosterone value for women was 6.0 ± 9.4 pg/mL and the median value was 3.1 pg/mL. The mean free testosterone value for men was 12.3 ± 4.6 pg/mL and the median value was 11.7 pg/mL. There was wide variation between individuals.

The distribution of GH for women was highly skewed to the right: 75% of the participants yielded GH levels below 1.25 ng/mL.

We have not examined the GH levels in men because of the limited samples.

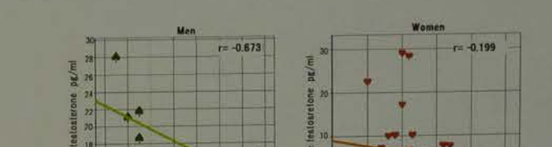

Fig.1 Distribution of free testosterone and growth hormone in men and women

Results 2: Correlation

The correlations found between the mental health scores and biomarkers are summarized in Table 1. Significant linear correlations between the BDI and STAI scores were found in all participants. An significant inverse linear correlation between the STAI2 score and age was found only in men.

A weak linear correlation between the BDI and free testosterone was found in men (r = 0.151, p = 0.372). On the other hand, we could not find a correlation between the BDI and free testosterone or GH in women (r = -0.017, p = 0.906; r = -0.075, p = 0.610).

The free testosterone levels were weakly correlated with age in both men and women (in men: r = -0.252, p = 0.132; in women: r = -0.193, p = 0.183). This finding indicates that testosterone levels decline with aging in both men and women.

The GH levels were significantly correlated with age in women (r = -0.348, p = 0.0143). And also, the data showed that GH levels are higher in women aged younger than 40 years, although there was variation individuals.

As shown in Figure2, a week inverse linear correlation between free testosterone and Brain sexs score were found in men and women.

Fig.2 Correlation between Brain sex scores and testosterone levels.

Table 1
Correlations among BDI, STAIs, age, free testosterone and growth hormone.

	BDI	STAI1	STAI2	age	free testosterone	growth hormone
(Men)						
BDI	1.000					
STAI1	0.422*	1.000				
STAI2	0.524**	0.836**	1.000			
age	-0.059	-0.366*	-0.143	1.000		
free testosterone	0.151	0.008	-0.021	-0.252	1.000	
(Women)						
BDI	1.000					
STAI1	0.548**	1.000				
STAI2	0.531**	0.836**	1.000			
age	0.008	-0.105	-0.098	1.000		
free testosterone	-0.017	-0.016	0.117	-0.193	1.000	
growth hormone	-0.075	0.01	0.067	-0.348*	-0.005	1.000

Abbreviations: BDI: Beck Depression Inventory, STAI: State Trait Anxiety Inventory
*: $p<0.05$, **: $p<0.01$

Discussion

Testosterone is reported to decrease in men with depression (McIntyre et al, 2006[5]); however, in this study, the free testosterone levels were positively associated with the BDI scores in men. On the other hand it seems that the free testosterone levels has something to do with brain functions, becouse of the correlation between free testosterone and Brain sex score. A monthly changes of the hormones should be taken into consideration, too.

Testosterone is also known to be related to aggression (Archer, 1991[6]). In women, testosterone is regulated by luteinizing hormone and is thought to change behavior monthly. In this study, the free testosterone levels in women were distributed over a wide range, suggesting that free testosterone levels may have an effect on mental condition. However, in this study, the levels did not correlate with the BDI or the STAIs score.

In recent years, some doctors have started to prescribe GH in GH-deficient older patients to increase vitality. However, in this study, GH levels did not correlate with the BDI or the STAI score. Thus, vitality seems to be not simply related to depression. Growth hormone secretion is pulsatile, so successive measurements may be required.

Conclusion

Free testosterone and growth hormone levels may not be suitable for evaluating mental health status such as depression or anxiety in men or women.

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