

Questionnaire Survey Results On Gastroesophageal Reflux Disease (GERD) In Yakumo-Town Resident's Health Examination (2010)

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Abstract—In recent years, in a stressful Japanese society, the number of patients with gastroesophageal reflux disease (GRRD) who complain of heartburn and have a poor appetite is increasing. Therefore, in this study, 11 types of self-administered questionnaire surveys on GERD were conducted at the annual resident health examination in Yakumo Town, Hokkaido, Japan where the population is almost no migration. As a result, there was no statistically significant difference between the male and females answers in the 11 questions regarding GERD. However, when examined by age group, it was found that males in their 40s complain of GERD symptoms statistically significantly more the females. Females did not differ in age when asked about GERD, but males in their 40s complained of GERD symptoms statistically significantly more than in their 70s. In the future, we think it is necessary to investigate eating habits at the same time.

Keywords—Healthy elderly people, Questionnaire survey, Reflux esophagitis, Residents' Health Examination

1. Introduction

The number of patients with gastroesophageal reflux disease (GERD) in Japan is increasing, and it is currently reported to be comparable to the frequency in Europe and the United States¹⁾. In 2005, the Montreal Definition was announced as a global consensus²⁾. The disease impairs quality of life and is followed by heartburn^{3),4)}. In this study, we report the results of a self-administered questionnaire survey of questions about GERD at the annual resident health examination in Yakumo Town, Hokkaido, Japan, where there is almost no population movement.

2. Material and Methods

2.1 Participants

A questionnaire survey was conducted among the participants of the Yakukmo Town Residents' Health Examination, among the participants who consulted the otolaryngology department.

2.2 Questionnaire survey

There were a total of 11 items in the questionnaire survey on Gastroesophageal Reflux Disease (GERD). The questionnaire was self-administered to the participants. The contents of the question show below.

- 1) Do you get heartburn?
- 2) Does leaning cause heartburn?
- 3) Do you have heartburn after eating?
- 4) Do you cough?
- 5) Can stomach acid come up in the esophagus?
- 6) Do you feel sick?
- 7) Dose you stomach hurt at night?
- 8) Are you somehow sluggish?
- 9) Are you always worried?
- 10) Do you lie down immediately after eating?
- 11) Have you gained weight recently?

3. Results

3.1 Participants Age and Sex

The number of participants in the otolaryngology area of the Yakumo Town Residents Examination in 2010 was 174 males and 244 females (To see Table 1). Looking at the participants by age group, males were most likely to participate in their 60's (70 peoples), and females were most likely to be in their 60's (81 peoples).

Table 1. Age distribution of participant in Yakumo study 2010 years

	40's	50's	60's	70's	80's
Male (n=174)	17	22	70	51	14
Female (n=244)	24	54	81	66	20
Total (n=418)	41	76	151	117	34

3.2 Questionnaire survey results

3.2.1 Questionnaire survey

We surveyed 11 questions about GERD using a self-administered questionnaire. Table 2 shows the male answers. Table 3 shows the female answers. The number and percentage of participants who answered that there was no problem with each question by age group are shown. The answers to the 11 GERD questions of males and females were statistically compared, and the results are shown in Table 4. Answers for each of the 11 items in GERD were not statistically significant between males and females. Next, Table 5 shows the results of comparing all 11 items related to GERD in each age group of males and females at once. As a result, there was a statistically significant difference between males and females in their 40s (Unpaired t-test, $P=0.0305^*$). Males answered that they had more problems with 11 GERD questions than females. Table 6 shows the statistical comparison of the results of 11 items of GERD questions for each age group within each gender. As a result, there was no statistically significant difference between the age

groups in females. However, there was a statistically significant difference between males in their 40s and 70s (Unpaired t-test, $P=0.0211^*$). Males in their 40s were statistically significantly worse than those in their 70s in answering 11 GERD questions.

Table 2. Participant's answer to the question about gastroesophageal reflux in Yakumo study 2010 years (Male=174) Average age \pm standard deviation = 65.44 ± 10.42

	40's (n=17)		50's (N=22)		60's (n=70)		70's (n=51)		80's (n=14)	
	No	%	No	%	No	%	No	%	No	%
Do you get heartburn?	10	59	19	86	63	90	42	82	3	21
Does leaning cause heartburn?	17	100	21	95	67	96	51	100	12	86
Do you have heartburn after eating?	11	65	20	91	64	91	47	92	12	86
Do you cough?	10	59	16	73	56	80	40	78	12	86
Can stomach acid come up in the esophagus?	9	53	19	86	54	77	45	88	12	86
Do you feel sick?	16	94	22	100	66	94	50	98	13	93
Dose you stomach hurt at night?	16	94	21	95	68	97	51	100	13	93
Are you somehow sluggish?	13	76	19	86	57	81	45	88	9	64
Are you always worried?	17	100	21	95	60	86	49	96	12	86
Do you lie down immediately after eating?	7	41	15	68	36	51	39	76	10	71
Have you gained weight recently?	10	59	17	77	55	79	45	88	13	93

Table 3. Participant's answer to the question about gastroesophageal reflux in Yakumo study 2010 years (Female=244) Average age \pm standard deviation = 64.52 ± 10.80

	40's (n=24)		50's (n=54)		60's (n=81)		70's (n=66)		80's (n=20)	
	No	%	No	%	No	%	No	%	No	%
Do you get heartburn?	21	88	48	89	67	83	56	85	15	75
Does leaning cause heartburn?	23	96	50	93	78	96	64	97	18	90
Do you have heartburn after eating?	22	92	51	94	71	88	58	88	17	85
Do you cough?	20	83	48	89	62	77	51	77	16	80
Can stomach acid come up in the esophagus?	21	88	46	85	69	85	55	83	16	80
Do you feel sick?	23	96	52	96	80	99	60	91	20	100
Dose you stomach hurt at night?	23	96	53	98	77	95	60	91	19	95
Are you somehow sluggish?	18	75	43	80	61	75	43	65	16	80
Are you always worried?	20	83	48	89	74	91	53	80	16	80
Do you lie down immediately after eating?	20	83	47	87	72	89	42	64	14	70
Have you gained weight recently?	22	92	43	80	70	86	55	83	18	90

Table4 Comparison of male and female answers to 11 questions about Gastroesophageal reflux (Unpaired t-test)

	Male and female Unpaired t-test
Do you get heartburn?	$P<0.2547$
Does leaning cause heartburn?	$P<0.7318$
Do you have heartburn after eating?	$P<0.4486$
Do you cough?	$P<0.2684$
Can stomach acid come up in the esophagus?	$P<0.3837$
Do you feel sick?	$P<0.8146$
Dose you stomach hurt at night?	$P<0.6032$
Are you somehow sluggish?	$P<0.4158$
Are you always worried?	$P<0.0681$
Do you lie down immediately after eating?	$P<0.0771$
Have you gained weight recently?	$P<0.2921$

*= $P<0.05$, **= $P<0.01$

Table 5 Comparison of 11 items related to gastroesophageal reflux by age group

	40s	50s	60s	70s	80s
Gender comparison P Value	0.0305*	0.5336	0.4154	0.0721	0.4306

*=P<0.05, **=P<0.01

Table 6 Comparison between ages for 11 questions regarding gastroesophageal reflux

2010	40s × 50s	40s × 60s	40s × 70s	40s × 80s	50s × 60s	50s × 70s	50s × 80s	60s × 70s	60s × 80s	70s × 80s
Male P valu	0.0608	0.1498	0.0211*	0.5218	0.569	0.4506	0.257	0.2141	0.413	0.1128
Female P valu	0.7724	0.8451	0.1206	0.2282	0.6382	0.0746	0.1426	0.1769	0.3242	0.6565

Unpaired t-test * = P<0.05, ** = P<0.01

4. Discussion

In this study, we surveyed questions about GERD using a self-administered questionnaire in the health examination of residents of Yakumo Town, Hokkaido, Japan, where the population is almost no movement. There was no statistically significant difference between males and females in the 11 GERD questions. However, by age group, it was found that males had statistically significant problems with GERD than females in their 40s. Furthermore, when statistically comparing the age groups within each gender, there was no statistically significant difference in all females, but statistically significant in males compared between 40s and 70s that GERD was worse in the 40s than in the 70s. It was found that males in their 40s, who are stressful at work, have GERD symptoms compared to other age groups and females. The number of patients with GERD is increasing in Japan¹). Poor quality of life due to heartburn. In the elderly, the muscles of the whole body are weakened^{5),6)}(examples include sarcopenia^{7),8)}, frail, etc.), the cardia is loosened, and gastric acid and stomach contents flow back in to the esophagus after eating, which may cause aspiration pneumonia in some cases. Undernutrition also has a systemic effect on the elderly^{9),10)}. Since GERD is related to meal content, it is necessary to increase the number of self-administered questionnaire survey items in the future to understand the situation.

5. Conclusion

In order to understand the actual condition of gastroesophageal reflux disease (GERD), which is common among Japanese people, we conducted a self-administered questionnaire survey about GERD at the annual resident health examination in Yakumo Town, Hokkaido, Japan, where the population dose not fluctuate. Comparing each age group between males and females, it was found that males in their 40s had lower GERD values than females. A comparison of age between genders showed that females were not statistically significant, but males had worse GERD in their 40s than in their 70s. As a result of statistically examining the difference between males and females for each of the 11 questions regarding GERD, there was no significant difference. It was found that males in their 40s, who are stressful at work, have more symptoms of GERD than other age groups. In the future, we would like to investigate the presence or absence of Helicobacter pylori, which is one of the cause of GERD. Currently, the Japanese diet is a high-fat diet (3-4 times more fat than before World War II), so gastric acid is secreted for a long time, which is one of the reason for the increase in GERD. In the future, we would like to conduct a self-administered questionnaire survey on eating habits

(including meal contents) to understand the actual situation.

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