Issues involving long term non-participants in a mass screening program from one town.

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Abstract  A mass screening program for cancer has been carried out in the town of Naru in Nagasaki Prefecture since 1971.

According to the data obtained from the general mass screening between 1985 and 1995, the mortality rate of all cancers in the late period (1991-1995, 27.3%) in Naru town was significantly lower than in the early period (1985-1990, 31.1%, P<0.005) and also the rate was lower for all Japan in the late period (28.5%) <Table 1>.

We thus concluded this long term general mass screening program to be an effective community measure for reducing the mortality rate of cancers.

However, various issues remain regarding non-participants in the mass screening program among inhabitants who live in such a medically depopulated area.

We carried out a questionnaire survey and an interview both by telephone and home visits, on a total of 882 individuals (males:427, females:455) who had not participated in the mass screening program for at least 5 years and were all over 40 years of age and residents of Naru town. The objective of this story was to evaluate the non-participants in this mass screening program.

<table>
<thead>
<tr>
<th>Towns</th>
<th>Naru</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>The population (1995)</td>
<td>4,535</td>
<td>2,425</td>
<td>4,453</td>
<td>4,290</td>
<td>7,052</td>
</tr>
<tr>
<td>The area (km²)</td>
<td>25.2</td>
<td>68.4</td>
<td>85.2</td>
<td>33.8</td>
<td>49.4</td>
</tr>
<tr>
<td>The mortality rate (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early period 1985-1990</td>
<td>31.1</td>
<td>23.2</td>
<td>24.0</td>
<td>27.2</td>
<td>26.9</td>
</tr>
<tr>
<td>Late period 1991-1995</td>
<td>27.3</td>
<td>30.3</td>
<td>24.3</td>
<td>33.9</td>
<td>30.3</td>
</tr>
</tbody>
</table>

Table 1 The mortality rate of all cancers, the population, the area in the model area Naru and four neighboring towns


Key Words : Mass screening, Non-participants, Mortality rate

I. Introduction

Numerous mass screening programs are now being conducted in Japan since they are thought to be an effective community measure for detecting cancers in the early stage, in order to reduce the mortality rate of cancers and also decrease medical costs. Needless to say, the purpose of mass screening is to detect cancers from many subjects, especially in the early stage. Nagasaki Prefecture has many isolated small islands and thus tends to be a medically depopulated area. Mass screening is therefore an especially appropriate system for inhabitants who live in such a medically depopulated area. The members of The Second Department of Surgery, Nagasaki University School of Medicine have continually conducted a mass screening annually since 1971 in Naru town.

We found this long term general mass screening
program to be an effective community measure for reducing the mortality rate of cancers. However, the number of non-participants remains large (Figure 1). Between 1985 and 1995, the rate of the screenees gradually decreased and numbered only 37.7% of the inhabitants, while non-participants numbered approximately 62.3%.

We carried out a questionnaire survey and an interview by both telephone and with home visits, on a total of 882 individuals (males: 427, females: 455) who had not participated for at least 5 years and were all over 40 years of age and residents of Naru town.

Fig. 1 The changes of the non-participants in the mass screening program

II. Subjects and Methods

1. The area of mass screening

A mass screening program has been performed since 1971 in Naru town, which had a population of 4,517 and covers an area of 25.2 square kilometers on a small island in Nagasaki Prefecture (Figure 2). An ultrasonographic examination was included since 1982, especially for identifying liver, biliary and pancreas diseases. In 1985, for heart diseases, gastric, breast, uterus, kidney diseases was also added. Screening for other organs has also been gradually included along with screening for colorectal diseases in 1988, and ophthalmic diseases in 1995.

2. The subjects participating in a questionnaire survey

Since the non-participants numbered 62.3%, we carried out a questionnaire survey and an interview by telephone or home visits including a total of 882 individuals (males: 427, females: 455) who were all over 40 years of age and residents of Naru town and had not participated in the mass screening program for at least 5 years.

The age distribution of the subjects was 27.9% in their 60's, 25.9% in their 40's, 18.7% in their 70's, 21.8% in their 50's, 19.3% in their 40's, 15.4% in their 50's for females (Table 2).

Table 2 The aged distribution of the subjects for males and females

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Subjects</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>40's</td>
<td>111</td>
<td>25.3%</td>
</tr>
<tr>
<td>50's</td>
<td>93</td>
<td>21.8%</td>
</tr>
<tr>
<td>60's</td>
<td>119</td>
<td>25.9%</td>
</tr>
<tr>
<td>70's</td>
<td>86</td>
<td>18.7%</td>
</tr>
<tr>
<td>80's</td>
<td>38</td>
<td>8.7%</td>
</tr>
<tr>
<td>90's</td>
<td>4</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total</td>
<td>427</td>
<td>100%</td>
</tr>
<tr>
<td>40's</td>
<td>88</td>
<td>15.3%</td>
</tr>
<tr>
<td>50's</td>
<td>70</td>
<td>15.4%</td>
</tr>
<tr>
<td>60's</td>
<td>134</td>
<td>29.5%</td>
</tr>
<tr>
<td>70's</td>
<td>99</td>
<td>21.8%</td>
</tr>
<tr>
<td>80's</td>
<td>60</td>
<td>13.2%</td>
</tr>
<tr>
<td>90's</td>
<td>4</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total</td>
<td>455</td>
<td>100%</td>
</tr>
</tbody>
</table>

3. The survey and a questionnaire methodology

1) The first survey was a questionnaire conducted by post card.

Table 3 The items of the questionnaire survey (multiple answers)

1. Please state the main reasons for not participating in the mass screening program.
   - Too busy with work
   - Presently fit, no problems
   - Not at home during mass screening
   - Do not wish to participate
   - Presently physically handicapped
   - The screening time takes too long
   - Afraid of physical examinations
   - Screening costs too much
   - Presently being treated at a local hospital
   - Plan to undergo another health check-up
   - Afraid of being diagnosed to have "cancer"
   - Other reasons

2. Are you willing to participate in this year's mass screening program
   - Yes
   - No

3. Do you have any particular requests regarding the mass screening program?
2) The second survey was an interview of the non-responders to the post card either by telephone or by home visits.

3) The questionnaire results are shown in <Table 3>.

4. The time periods of the survey

The first survey was conducted for one week from July 7 to July 13, 1997. The second survey as conducted for two days from August 7 to August 8, 1997.

5. Analysis of the survey

All data collected were analyzed by computer using a software package named Relational Database "Kiri Ver.5" developed by the Management Engineering Research Institute Co., and were analyzed by the X^2 test with P<0.01 considered to indicate statistical significance.

III. Results

1. The overall response rate and the rate based on age and sex

The response rate was 26.2% (231 out of 882 respondents) in the first survey. The total response rate was 37.3% (329 out of 882 respondents) including 79 respondents by telephone and 19 respondents based on a home visit.

The rate regarding age or sex is shown in <Table 4>, and included 152 of males and 177 of females. The aged distribution of the respondents was 51.3% in their 70’s, 40.3% in their 60’s, 40% in their 80’s and 26.9% in their 50’s for males, 48.5% in their 60’s, 43.4% in their 70’s, 36.7% in their 80’s and 31.4% in their 50’s.

2. The reasons for non-participants for males and females (multiple answers)

Among males the reasons for non-participation included: "they were presently being regularly treated at a hospital": 48 (20.2%), "they were fit, and had no problems": 35 (14.7%), "they had other planned health check-ups": 32 (13.4%) and "were too busy with work": 29 (12.2%). On the other hand, the reasons for non-participating females included: "they were presently being regularly treated at a hospital": 76 (27.7%), "were physical handicapped": 31 (11.3%), "did not want to participate" 27 (9.9%) and "they had received other planned health check-ups": 25 (9.1%) <Figure 3>. The highest rate comprised 70.4% who responded either
that in "they were presently being regularly treated at a hospital" or "they had received other planned health check-ups". However, 26.1% demonstrated a lack of understanding regarding the purpose and goals of mass screening. Such reasons included "not wanting to participate", "fear of undergoing a physical examination", "a fear of being diagnosed with cancer", and so on.

3. The reasons for non-participation by age.

The age distribution of the subjects was approximately 50% in their 60's and 70's.

Regarding individuals in their 60's and 70's the main reasons for non-participation were "already being treated at a hospital": 45 (36.3%) for those in their 60's and 36 (29.0%) for those in their 70's. In addition, the answer "presently healthy, no problems" was also higher rate 20 (35.1%) in their 60's, in the group of individuals in their 60's and 70's and 15 (26.3%) in their 70's. Regarding "plan to have another health check-up" the highest rate was for those in their 60's and the answer "too busy with work" was also the highest for those in their 60's: 17 (32.0%).

4. The willingness to participate in future mass screening

A total of 82 individuals showed a willingness to participate in future mass screening, and included 38 males and 44 females. On the other hand, 73 were unwilling to participate in future mass screening, and consisted of 34 males and 39 females. In addition 90 individuals gave no answer.

N. Discussion

According to the survey, we identified the main reasons for non-participation in mass screening. A total of 70.4% including those who did not participate due to "presently being treated at another hospital" and "they planned to have another health check-up". That is to say, over 70% of the non-participants were receiving some kind of medical treatment. In addition, more coordination is called for among those receiving "another planned health check-up" and those undergoing "mass screening".

Regarding the ways to improve the percentage of participants in mass screening; the most important factors are: ① provide free transportation to the health center, ② reducing the time required for the screening test.

More difficult problems that need to be solved, include ① a fear of being diagnosed to have "cancer", ③ being afraid of physical examinations, ③ presently healthy no problems. We consulted with the local government regarding these issues and it was thus decided to provide buses and move the starting time of mass screening up to 7:30 or one hour earlier than before. It was also decided to review the local government plans to improve the overall health education of the local residents in order to better explain the need for mass screening to help detect cancers, especially in the early stage, so that such patients can be successfully treated. If cancer can be detected at an early stage the overall successful treatment rate will improve1-10.

To improve the mass screening program the following steps are considered to be necessary: 1. to regularly evaluate the health needs of the local residents, 2. to regularly confer with the local government, 3. to provide good medical advice to the local residents, 4. to improve health education for all local residents.

Acknowledgments

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References

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離島集団検診における未受診者の課題

Key Words:  集団検診, 未受診者, 死亡率