Introduction

The incidence of testicular cancer (TC) which is defined as the most common malignancy among 15-34 aged males has increased worldwide in recent years despite being rare in the general population (Parkin et al., 2005; Verhoeven, 2012). It is estimated that 8820 men will receive new TC diagnosis and 380 will die from this disease in 2014 in the USA (Siegel et al., 2014). In England, it was reported that nearly 2200 men were diagnosed with TC and 70 died from the disease in 2011 (Cancer Research UK, 2014). The TC incidence is expected to be more than 20% in 2025 in 13 South European countries including Finland, Croatia, Slovenia, Italy and Spain (Znaor et al., 2014). In our country, as all over the world, the most common cancer type among men is TC (Gultekin and Bozbas, 2014). More than 90% of patients are cured with surgery, radiotherapy, and chemotherapy alone or combination of them (Yetisyigit et al., 2014). This success depends on the early and accuracy of disease diagnosis and the application of optimum treatment (Zhao et al., 2014).

In the TC which is so frequent among young male adults, phase, prognosis and mortality are reported to be directly associated with early diagnosis (Albers et al., 2011). Therefore, “early diagnosis and treatment” is very important in TC. One of the ways to early detect TC is regular self-exam of testicles (TSE) (Altinel and Aydin Avci, 2013). Many of TC cases are firstly detected by the patient either with TSE done regular or without knowing or some are determined with routine physical examinations. Self-exam of testicles has many advantages such as being easily learned and applied, being safe and economic, not requiring specialized equipment, not being invasive and not taking time compared to the other diagnostic methods (Gocgelidi et al., 2011; Asgar Pour and Cam, 2014). Despite TSE with advantages in many ways, studies have revealed that the majority of men do not do TSE and have insufficient knowledge about TC (Yilmaz et al., 2009; Kuzgunbay et al., 2013; Asgar Pour and Cam, 2014). Guidelines especially emphasize on doing regular TSE by the subjects who are at risk of TC. The importance of TC and TSE should be told and the right application...
method should be taught to these subjects. Health care professionals, mainly nurses, have great roles in this issue (Yilmaz et al., 2009; Altinel et al., 2013; Asgar Pour and Cam, 2014).

The present study was conducted to determine knowledge level, attitudes and practices of technicians working at hospitals about testicular cancer (TC) and self-exam of testicles (TSE).

**Materials and Methods**

In this cross-sectional study, which was conducted between 2nd of February and 31st of May 2012 in the two big towns of Kayseri (Kocasinan and Melikgazi), totally 1021 health technicians working at governmental hospitals (n=935) and private hospitals (n=86) were randomly selected and 275 technicians were recruited of whom 243 (88.4%) participated. Of the subjects,
questionnaire forms of 32 technicians were excluded due to lacking data. Healthy control subjects who did not work at healthcare services, who did not have a known disease and who resembled hospital group were included in the study. A questionnaire was applied to 255 controls while study was conducted with 235 of them since 20 subjects did not want to participate. Questionnaire forms were delivered to both groups by the researchers and collected back within one week.

Data collecting tools

Data of the research were collected with a questionnaire form developed after a literature review and composed of 2 sections. In the first section, questions about socio-demographic characteristics (age, education, marital status, income level, etc.) were included while in the second section, questions about knowledge, attitude and practices of subjects about TC and TSE were included. The aim of the research was explained to participants and written consent was obtained.

Statistical analysis

Statistical data analysis was performed with Statistical Package for Social Sciences (SPSS) version 17.0 on computer. Number, percentage, mean and chi-square test for comparison of categorical variables were used in evaluation of data, p<0.05 was set as statistically significant in comparisons.

Results

The mean age of hospital and control groups were 31.23±8.0 years and 31.30±9.4 years, respectively and groups were similar in terms of mean age. Study group

| Table 3. Status of Knowing the Symptoms of Testicular Cancer |
|------------------------------------------------------------|
| Symptoms of Testicular Cancer                               | Hospital Group | Control Group | Statistical Analysis |
|                                                           | n   | %   | n   | %   | p        |
| Palpable testicle lump/mass                                |     |     |     |     |          |
| Common                                                     | 63  | 25.9| 27.2| 50.4|          |
| Seldom                                                     | 43  | 17.7| 13.2| 41.9| 0.396    |
| Not knows                                                  | 137 | 56.4| 59.6| 50.5|          |
| General swelling in the testicles                          |     |     |     |     |          |
| Common                                                     | 63  | 25.9| 61  | 26  |          |
| Seldom                                                     | 45  | 18.5| 40  | 17  | 0.907    |
| Not knows                                                  | 135 | 55.6| 134 | 57  |          |
| Pain in testicles                                          |     |     |     |     |          |
| Common                                                     | 71  | 29.2| 66  | 28.1|          |
| Seldom                                                     | 68  | 28  | 48  | 20.4| 0.092    |
| Not knows                                                  | 104 | 42.8| 121 | 51.5|          |
| Pain or a feeling of heaviness in the testicles            |     |     |     |     |          |
| Common                                                     | 60  | 24.7| 55  | 23.4|          |
| Seldom                                                     | 66  | 27.2| 48  | 20.4|          |
| Not knows                                                  | 117 | 48.1| 132 | 56.2| 0.147    |
| Skin rash/change on scrotum                                |     |     |     |     |          |
| Common                                                     | 38  | 15.6| 26  | 11.1|          |
| Seldom                                                     | 49  | 20.2| 37  | 15.7| 0.102    |
| Not knows                                                  | 156 | 64.2| 172 | 73.2|          |
| Problems with sexual intercourse                           |     |     |     |     |          |
| Common                                                     | 52  | 21.4| 44  | 18.7|          |
| Seldom                                                     | 48  | 19.8| 40  | 17  | 0.478    |
| Not knows                                                  | 143 | 58.8| 151 | 64.3|          |
| Weight loss                                                |     |     |     |     |          |
| Common                                                     | 39  | 16  | 23  | 9.8 |          |
| Seldom                                                     | 54  | 22.2| 41  | 17.4| 0.028    |
| Not knows                                                  | 150 | 61.7| 17  | 72.8|          |
| Blood in the urine                                         |     |     |     |     |          |
| Common                                                     | 45  | 18.5| 39  | 16.6|          |
| Seldom                                                     | 43  | 17.7| 47  | 20  | 0.744    |
| Not knows                                                  | 155 | 63.8| 149 | 63.4|          |
| Pain, burning when urinating                               |     |     |     |     |          |
| Common                                                     | 56  | 23  | 57  | 24.3|          |
| Seldom                                                     | 54  | 22.2| 48  | 20.4| 0.877    |
| Not knows                                                  | 133 | 54.7| 130 | 55.3|          |
| Testicular temperature increase                            |     |     |     |     |          |
| Common                                                     | 43  | 17.7| 33  | 14  |          |
| Seldom                                                     | 52  | 21.4| 43  | 18.3| 0.297    |
| Not knows                                                  | 148 | 60.9| 159 | 67.7|          |
| Discoloration of the scrotum                               |     |     |     |     |          |
| Common                                                     | 44  | 18.1| 33  | 14  |          |
| Seldom                                                     | 47  | 19.3| 42  | 17.9| 0.382    |
| Not knows                                                  | 152 | 62.6| 160 | 68.1|          |
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Table 4. Thoughts of Participants about Testicular Self-examination and Testicle Cancer

| Thoughts                                                                 | Hospital Group | Control Group | Statistical Analysis |
|-------------------------------------------------------------------------|----------------|---------------|----------------------|
| I’m afraid of getting testicular cancer                                  |                |               |                      |
| Agree                                                                   | 215            | 192           | 88.5                 | 81.7 | 0.037 |
| Disagree                                                                | 28             | 43            | 11.5                 | 18.3 |
| Testicular cancer cannot be cured never fully                            |                |               |                      |
| Agree                                                                   | 46             | 35            | 18.9                 | 14.9 | 0.24 |
| Disagree                                                                | 197            | 200           | 81.1                 | 85.1 |
| Among family members of men with testicular cancer are at greater risk of developing the disease |                |               |                      |
| Agree                                                                   | 139            | 145           | 57.2                 | 61.7 |
| Disagree                                                                | 104            | 90            | 42.8                 | 38.3 | 0.316 |
| Testicular cancer often strikes men at my age                            |                |               |                      |
| Agree                                                                   | 64             | 91            | 26.3                 | 38.7 | 0.004 |
| Disagree                                                                | 179            | 144           | 73.7                 | 61.3 |
| Testicular cancer is a very serious disease                              |                |               |                      |
| Agree                                                                   | 185            | 176           | 76.1                 | 74.9 | 0.753 |
| Disagree                                                                | 58             | 59            | 23.9                 | 25.1 |
| I can detect testicular cancer myself                                   |                |               |                      |
| Agree                                                                   | 87             | 111           | 35.8                 | 47.2 | 0.011 |
| Disagree                                                                | 156            | 124           | 64.2                 | 52.8 |
| Many men get testicular cancer                                          |                |               |                      |
| Agree                                                                   | 100            | 131           | 41.2                 | 55.7 | 0.001 |
| Disagree                                                                | 143            | 104           | 58.8                 | 44.3 |
| If diagnosed early, testicular cancer is more likely to be recovered     |                |               |                      |
| Agree                                                                   | 207            | 194           | 85.2                 | 82.6 |
| Disagree                                                                | 36             | 41            | 14.8                 | 17.4 | 0.434 |
| Initial treatment of testicular cancer is surgery                        |                |               |                      |
| Agree                                                                   | 68             | 69            | 28                   | 29.4 | 0.739 |
| Disagree                                                                | 175            | 166           | 72                   | 70.6 |
| In the case of early diagnosis, testicular cancer is the cancer type with best treatment success |                |               |                      |
| Agree                                                                   | 161            | 127           | 66.3                 | 54   |
| Disagree                                                                | 82             | 108           | 33.7                 | 46   | 0.006 |

stated that they had a moderate level of income (59.3%) while control group had a good level of income (44.2%). Most of the hospital group had graduated from Health High School and Health College (51.8%) while controls were high school graduates (34.5%). The two groups were similar in terms of marital status, smoking, cancer history in the family, TC history in the family and having problems about testicles.

Of the hospital group, 63.4% and of control group, 50.6% defined that they had heard of TC and this difference was statistically significant (p=0.005, Table 1). Most of the males in both groups have not heard of TSE and did not do a TSE while those men did not do the TSE due to not knowing it (48.1%) firstly and not caring it (30.5%) secondly. Controls did not do TSE because they did not care it (66.8%) firstly and they did not know it (21.9%) secondly (Table 1).

Table 2 shows men in the two groups having insufficient knowledge about the age of TC, the time and frequency of TSE. Table 3 shows they had insufficient knowledge about TC signs. It was determined that men in the two groups thought TC was a very serious disease, they were afraid of getting TC and thought that chance of treatment success was high if it was early diagnosed (Table 4).

**Discussion**

Of the hospital group, 63.6% and of the control group, 50.6% have heard about TC being significantly different. Other studies have reported similar (57.6% (Altinel and Avcı, 2013), 60.9% (Yılmaz et al., 2009)), less (11.3% (Rudberg et al., 2005), 23.3% (Gocgeldi et al., 2011)) or higher (91.0% (Khadra and Oakeshott, 2002), 80.0% (Asgar Pour and Cam , 2014), 90.6% (Moore and Topping, 1999)) ratios compared to our findings. Given the fact that study group were graduates of Health High School and Health College and worked at healthcare environments, higher ratio of hearing TC than the other group is an expected finding. Interesting finding in our study however is the majority who have not heard of TSE and so not have done TSE although at least half of males had heard of TC. Khadra et al. (2002) have reported that of the participants, 28.0% heard of TSE while 5.6% and 8.9% of the subjects heard of TSE according to Rudberg et al. (2005) and Gocgeldi et al. (2011), respectively. In Shallwani et al’s study, it was found that while 2% of men applied TSE before the education, the ratio increased to 26% after the education, being statistically significant. Also, in our study it was determined that men who did TSE did not do it regularly. TSE is an important tool to get protected from late diagnosis of TC. In terms of this disease which has a high successful treatment chance with early diagnosis, patients at high risk should be aware and encouraged (Muliri et al., 2012).

In the present study, men in both groups were found to have very little information about TC and TSE. Insufficient knowledge about practices regarding both the disease and
its early diagnosis is one of the most important barriers for exhibiting preventive health behaviours of the individuals. Therefore, low ratio of doing TSE of men who have very low level of knowledge is not a surprising result. In line with this finding, the reasons for not doing TSE were firstly not knowing (48.1%) and secondly not caring it (30.5%) by the hospital group while the reasons were firstly not caring (66.8%) and secondly not knowing it (21.9%) by controls. Ugurlu et al. (2011) have found that 83.4% and 55.7% of participants did not do TSE due to not knowing and not caring it, respectively. According to Ozbas et al.’s study (2011), men did not do TSE because they did not know (88.0%) and did not care it (6.0%). Yilmaz et al. (2009) and Gocgeldi et al. (2011) have reported that 94.0% and 54.0% did not do TSE because of not knowing it, respectively. This demonstrates the importance of having information about the issue.

It is appositive state that most of the men in both groups wanted to get information about TC and TSE which shows that they cared about TC and their health status. The request to get information by the majority in both groups may also be explained by their fear of TC, by thought of TC as a very serious disease and by thought of high success of its treatment when early diagnosed. While the feeling of being afraid of getting cancer diagnosis may be a triggering factor, it may cause reluctance and avoidance behaviours in individuals if this fear reaches critical levels (Brewer et al., 2011).

In the present study, level of knowledge about TC and TSE of men in both groups, doing TSE and doing it with recommended time and frequency were found to be low. The high level of knowledge about TC in the study group despite low ratio of TSE shows that knowledge has not been turned into practice. Consequently, it was recommended to plan and apply health educations in order to increase information about TC and TSE of men especially who are at risk by the nurses and healthcare professionals while those educations should be periodically repeated with the evaluation of its efficacy for providing to turn into practices.

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