BALKAN
Military Medical REVIEW

Official Journal of
Balkan Military Medical Committee

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Health beliefs and breast self-examination practice in Turkish women working in a military institution

Kara B¹, Iscan B², Atak N³

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Abstract: The purpose of this study was to examine health beliefs and practice of breast self-examination (BSE) in Turkish women. The study was designed as a cross-sectional survey between October and November 2006. The study sample consisted of 174 women who worked in the Turkish Naval Forces Command. The data were collected by using a personal data form and the Champion's Health Belief Model Scale. Descriptive statistics, reliability analysis, The Mann-Whitney U test and the chi-square test were used for data analysis. About 62% of the women reported practising BSE at least once in the previous year, only 16.1% performed BSE regularly every month. It was found that there is a significant relationship between the frequency of BSE practice and having knowledge on BSE. There was a statistically significant difference in the mean scores on confidence and barriers subscales between the women who performed regular BSE and those who did not. The results of this study showed that women who were informed about BSE, had more confidence in their ability to perform BSE, and perceived fewer barriers were more likely to practice BSE regularly.

Key Words: Breast cancer, breast self-examination, health beliefs, Turkish women.

Breast cancer is the most common type of cancer among women in both developed [1] and developing countries like Turkey (26.6%). A total of 5634 new cases of breast cancer were diagnosed in Turkey in 2003 [2]. Breast cancer is the second leading cause of death from cancer in Turkish women, after lung cancer [3]. Early detection of breast cancer facilitates treatment and increases survival. Recommended methods of early detection include mammographic screening, clinical breast examination (CBE), and breast self-examination (BSE) [4]. The American Cancer Society recommends that women aged 40 years and older should have an annual mammogram and an annual CBE and should do a monthly BSE. Women aged 20 to 39 years should have a CBE every three years and should perform a monthly BSE [5].

Mammography and CBE are considered the most reliable screening methods, although their effectiveness remain controversial [4,6]. Recent data have also raised questions regarding the efficacy of BSE [4,6,7]. However, BSE supports women in assuming responsibility for their own health and facilitates early diagnosis of breast cancer by increasing breast awareness. Practising BSE regularly is important for women living in places where mammography screening is not present and who are not included in a mammography screening program due to their age [7]. BSE is the only early detection method that enables women to monitor their breast health between other screenings [8]. In addition, BSE is a safe, noninvasive and economical screening method for the early detection of breast cancer [9]. In Turkey, mammography screening programs are not widely utilized. This highlights the impor-
tance of implementing readily available preventive practices, notably BSE. BSE education is also included in the Republic of Turkey Ministry of Health's national breast cancer control program. It is recommended that women aged 20 or older perform BSE monthly [10].

The Health Belief Model (HBM), a psychological model that attempts to explain and predict health behaviors, was used as the theoretical framework in this study [11]. The model consists of six concepts: perceived susceptibility to an illness, perceived seriousness of the illness, perceived benefits and barriers for the presumed action, health motivation and confidence in one's ability [12]. When applied to breast cancer, the HBM predicts that women more likely to practice BSE are those who believe that they are susceptible to developing breast cancer and that breast cancer is a serious disease, perceive more benefits of BSE than barriers, and are more motivated to promote their health and are confident in their ability to perform BSE [13,14]. Consistent with the HBM, the literature suggests that BSE practice is influenced by variables such as sociodemographic [9,15-19] and cultural characteristics [20,21], family or personal history of breast cancer [16,22], knowledge about BSE and breast cancer [15,22-24] and health beliefs related to BSE [25].

The increasing elderly population will definitely lead to an increasing incidence of breast cancer [26]. It is therefore important to increase the nurses' awareness of this matter in our country. The BSE practices of women and the factors involved should be determined so that nurses can play an active role in the prevention and early diagnosis of breast cancer and provide their counselling services effectively. Although there are a few related studies from Turkey, the number of studies on the beliefs regarding breast cancer and BSE is quite limited. In addition, inconsistencies exist in findings about the relationships between demographic and health-related variables and BSE practice. We also did not come across any studies on the BSE practices and health-related beliefs of women working in military institutions served by military hospitals. The aims of this study were to determine health beliefs and practice of BSE and to identify factors related to the frequency of BSE practice in women working in the Turkish Naval Forces Command.

Materials and Methods

This cross-sectional study was conducted in the Turkish Naval Forces Command between October and November 2006. The study population consisted of 188 women. The data were collected from the women aged 20 or older, who had no personal history of breast cancer, were not pregnant or breast-feeding and were willing to participate in the study. The women were invited to participate after an explanation by the second investigator and the presentation of a written information sheet detailing the objectives of the study and eligibility to participate. Potential participants were informed that participation was voluntary with no known risks and that they could withdraw from the study at any time. Confidentiality was assured and a written consent form was signed by each participant. The investigator stayed with the women while they were completing the questionnaires. Completion of the instruments took an average of 15 minutes. Fourteen (7.5%) women refused to participate or did not meet the inclusion criteria. The sample included 174 participants.

The data were obtained with a personal data form, which was prepared by the investigators based on a literature review. A panel of five investigators with experience in preventive healthcare, including three registered nurses and two physicians, examined the validity of the personal data form content. A high degree of agreement was found among these experts. The form was pilot tested on a sample of 20 women of varying educational status and was subsequently modified. It included 10 items in two sections: sociodemographic variables (age, current marital status, education level and health insurance) and health-related variables (having a history of breast cancer in the family, personal history of a breast problem, having heard or read about BSE, sources of BSE information and BSE practice and frequency in the previous year).

Health beliefs were assessed using Champion's revised Health Belief Model Scale (HBMS) [27].
This scale was adapted by Gozum and Aydin for use especially with Turkish people. The Turkish version of the HBMS consists of 36 items that are clustered into six subscales: susceptibility (three items), seriousness (six items), motivation (five items), benefits of BSE (four items), barriers to BSE (eight items) and confidence of BSE (10 items). Respondents answer items on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate stronger feelings related to that construct. Reported Cronbach’s alpha for the HBMS ranged from 0.69 to 0.83 [28]. Cronbach’s alpha coefficient for the current study ranged from 0.77 to 0.90.

Statistical analysis was performed with the SPSS software, version 11.0. Descriptive statistics included the mean, standard deviation (SD), frequency distributions and percentages. Internal consistency was calculated by Cronbach’s alpha reliability analysis. The sample was categorized into two groups for BSE practice as group 1, women who performed regular monthly BSE, and group 2, women who did not. The Mann-Whitney U test was used for continuous variables and the chi-square test for categorical variables to determine differences between the two groups. The level of significance was set at 0.05 for all tests.

Results

The sociodemographic and health characteristics of the total sample and by frequency of BSE practice are presented in Table 1. The mean age of the sample was 35.5 ± 5.4 years (range 20 to 52). Most participants (66.1%) were between the ages of 30 and 39 years. The women were highly educated. The majority of the women (72.4%) had graduated from a university. All participants (100%) had health insurance. Sixty-nine percent of the participants had heard or read about BSE. In this study, healthcare professionals took first place among the sources of information for the women (40.8%). It was determined that 39.2% of the women learned about the BSE practice from television, radio and the internet, 35% from printed materials and 19.2% through other sources.

Table 1. Sociodemographic and health characteristics of total sample and by frequency of breast self-examination practice

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total sample (n = 174)</th>
<th>Regular BSE performers* (n = 146)</th>
<th>Nonperformers (n = 28)</th>
<th>χ²-value**</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group (years)</td>
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<td></td>
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<tr>
<td>20-29</td>
<td>23 13.2</td>
<td>5 17.9</td>
<td>18 12.3</td>
<td>0.69</td>
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<td>30-39</td>
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<td>17 60.7</td>
<td>98 67.1</td>
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<td>40 and older</td>
<td>36 20.7</td>
<td>6 21.4</td>
<td>30 20.5</td>
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<td>Married</td>
<td>116 66.7</td>
<td>20 71.4</td>
<td>96 65.8</td>
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<td>Unmarried</td>
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<td>8 28.6</td>
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<td>High school</td>
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<td>42 28.8</td>
<td>0.633</td>
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<td>126 72.4</td>
<td>22 78.6</td>
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<td>Family history of breast cancer</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>25 14.4</td>
<td>7 25.0</td>
<td>18 12.3</td>
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<td>No</td>
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<td>Ever heard or read about BSE*</td>
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* BSE: Breast self-examination. ** Chi-square test.
from their families and friends. The majority of the women (62.1%) reported practising BSE at least once in the last year. Only 16.1% of the participants (n = 28) performed BSE on a regular monthly basis. Forty-six percent (n = 80) reported performing BSE at irregular intervals or occasionally. A total of 37.9% of the women (n = 66) stated that they had never performed BSE.

As indicated in Table 1, the practice of BSE monthly was higher among women who reported having heard or read about BSE. The results of the chi-square test showed a significant relation between regular BSE practice and having heard or read about BSE ($\chi^2 = 15.016; p < 0.001$). There was no relation between regular BSE practice and age, marital status, education level, having a history of breast cancer in the family, and having a personal history of a breast problem ($p > 0.05$).

Table 2 presents the comparison of the HBMS subscale mean scores by the BSE frequency of the women. As shown in Table 3, the mean score on confidence of the women who performed regular BSE were significantly higher than those who did not ($z = -4.507; p < 0.001$). Conversely, the participants who did not perform BSE monthly perceived more barriers to BSE than other women. A significant difference was found between the two groups for the mean score on barriers to BSE ($z = -4.273; p < 0.001$). There were no significant differences between the two groups in the mean scores on health motivation, benefits of BSE, perceived seriousness of breast cancer and susceptibility to breast cancer ($p > 0.05$).

**Discussion**

Significant differences in the percentage of women who know and practice of BSE have been shown in studies from our country and around the world. The results of this study showed that the women had high rates of being aware of BSE practice (69%). The educational level was quite high in our study group and the high rate of women who were aware of BSE was to be expected. The percentage of women obtaining information about BSE was found to be 51.6 - 81.1% in women of various ethnic origins in the US [15,29]. Studies reported this rate as 79.1% in Malaysian women [18], 67% in Jordanian women [16], and 63% in Iranian women [20]. In previous studies performed in Turkey, the rate of the women obtaining information about BSE practice was found to be between 26.2% and 86.2% [9,19,22,26,30].
In this study, healthcare professionals were identified as the main source of BSE information by the women (40.8%), similar to other studies [9,22]. Sadler et al. reported that recommendation by a healthcare professional is considered the most significant predictor of women’s adherence to breast cancer screening guidelines [15]. Training provided by healthcare personnel also helps BSE to be practiced more effectively [25]. In addition, our data demonstrated that television, radio and the internet were among the most common sources of information on BSE for the women (39.2%). This result supports other studies [16,19], suggesting that the media is an important source of BSE information.

Although the rate of those practising BSE is high in this study (62.1%), it is interesting that only 28 of women (16.1%) performed BSE regularly. The results of this study are consistent with other studies [9,15,16,18,19,20,26]. The BSE frequency may have been influenced by the limited acceptance of BSE as "habitual behavior" and limited awareness of its benefits when performed regularly [9,31]. Other studies performed in developed countries have reported that less than half of their study groups (25 - 42.1%) practiced BSE monthly [15,17,29,31-34]. In our study, the rate of regular BSE practice of the women was lower than those found in the developed countries. This rate is high in comparison to studies in the Arabic countries (2.7 - 7%) [16,20,35,36], but is similar to figures reported from Turkey (10.2 - 32.1%) [9,19,22,26,28,37]. Differences in the frequency of BSE practice can be attributed to cultural characteristics [14].

Consistent with previous findings [15,16,19,22-24,34], the results of this study showed that knowledge of BSE improved regular BSE practice in women. Similarly, Lu reported that BSE instruction and follow-up reminders improved both BSE frequency and accuracy [24]. Based on the HBM, education provides behavior change by increasing the breast health awareness and BSE practice proficiency of the women [14]. This result supports the need for continuing educational programs on BSE practice in military hospitals.

Contrary to the findings of previous studies [15,16,18,19,22,34,36], demographic characteristics like age, education level and marital status were not found to be variables related to performing BSE regularly in this study. Our findings are in agreement with the studies of Jirojwong and MacLennan [32] and Dundar et al. [26] The lack of an effect of demographical features on BSE performance frequency in our study may be due to the characteristics of the sample.

Motivation and benefit perception had the highest values and barrier perception had the lowest value among the health beliefs of the women related to BSE practice in our study. The participants did not consider themselves at high risk of breast cancer. We believe that the level of perceived susceptibility is low in our study because of the characteristic of the sample. The majority of the study group was aged 30 and 39 years which is younger than the age at which breast cancer is a threat for most women. Only 20.7% of the women were at an age where breast cancer is common [28]. Perceived benefits being higher than the barriers in the participants of this study indicate that the motivation and likelihood of beginning the behavior is high [14]. When the obtained findings are compared with the studies of Champion [27] and Mikhail and Petro-Nustas [38], some similarities in rankings were determined among the three groups. However, both Turkish and American women were found to perceive fewer barriers and had more confidence compared to Jordanian women (Table 2). This finding may be partially due to cultural differences. Previous studies have demonstrated that cultural characteristics affect the health beliefs related to BSE practice [17,25,32,33,39]. The fatalistic approach, which is widespread in the Arabic culture, affects the health beliefs of the women and their perception about the benefits of early detection methods [38]. Further studies must be performed to determine the reasons for this difference.

We found in this study that participants who performed regular BSE perceived fewer barriers and were more confident about performing BSE than those who did not. The results support previous findings suggesting that confidence and barriers were significant predictors for performing regular BSE [22,25,38]. As reported by Foxall et al., BSE frequency and confidence reinforce each
other [25]. Therefore, military nurses should perform assessments concerning confidence in BSE practice and try to increase confidence in the women. On the other hand, the BSE practice frequency decreases as the barrier perception increases [9]. It is known that cultural beliefs and values such as fatalism and pessimism influence the prevention and cure of cancer as barriers. The desire to perform BSE may be influenced by cultural obstacles [7]. Barriers decreasing BSE practice need to be determined by qualitative studies. Appropriate strategies can then be planned to reduce them.

The results of this study should be interpreted in light of some potential limitations. Firstly, data were collected by the self-reporting method. The participants might have made mistakes since BSE practice frequency is a measurement based on remembering. Secondly, our study was designed as a cross-sectional survey and did not include monitoring of participants. Health beliefs and BSE practice of the individuals also change over time. Finally, the sample number was relatively small in this study. Therefore, the results of this study cannot be generalized.

Conclusion:
The study findings revealed that a low percentage of women performed regular monthly BSE. Women who were informed about BSE, had more confidence in their ability to perform BSE and perceived fewer barriers were more likely to practice BSE monthly. It is essential that military nurses be aware of the factors related to regular practice of BSE, including relevant training and health beliefs. Nurses must personally intervene after determining the women's BSE practice and the influencing factors. Nurses should also develop strategies for breast health promotion practices and for counselling. Cultural factors should be considered in planning educational programs on BSE practice.

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15. Sadler GR, Ko CM, Cohn JA, White M, Weldon


Abstract: We used botulinum toxin in spinal cord injured (SCI) patients on clean intermittent catheterization (CIC), to treat spastic bladder neck and facilitate CIC. Five paraplegic SCI male patients who had difficulty on CIC were included in the study. Spastic bladder neck was detected in all patients. They were treated by injecting 100 IU of botulinum toxin A into the bladder neck. Before and 3 weeks after the procedure, patients were asked to define the degree of CIC difficulty with numeric and descriptive ratings from 0 (no difficulty) to 5 (the most difficult), and the results were noted. The spasticity of the bladder neck disappeared in all patients after injections. No complications occurred. Follow-up period was 168±26.83 days. The median level of CIC difficulty before and after procedure were 4 (3-4) and 0 (0-1), respectively, and the difference was statically significant. However, the spasm recurred in all patients after a mean period of 118±23.87 days, and all patients re-experienced catheterization difficulties. Although it's relatively short acting time may require re-injections, this treatment is a safe and effective procedure for management of patients experiencing difficulties on CIC. This procedure not only makes catheterization easier but also may prevent complications of CIC.

Key Words: Botox, clean intermittent catheterization, spinal cord injury

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Bladder emptying is a significant problem for spinal cord injured (SCI) patients. High intravesical pressure and poor bladder emptying may lead to autonomic dysreflexia, serious urinary tract infection, renal damage and premature death [1]. There are several methods for SCI patients to empty their bladder; medications, condom or indwelling catheters, intermittent catheterization, and electrical stimulation. All of these treatment methods have associated complications. A safe, effective and reversible treatment that allows low pressure bladder drainage has not been developed. Clean intermittent catheterization (CIC) for neuropathic bladder has proved to be a very useful method of bladder drainage in the early post injury period as well as in the later stages after spinal trauma [2]. Recent studies show that some of the SCI patients have bladder neck spasticity because of their neurological problems and these patients have difficulty during CIC procedure that may lead complications (urethral bleeding, false passage or stricture formation) [3]. Botulinum toxin (BT) is the product of ubiquitous bacteria Clostridium botulinum. The bacteria are found in soil and marine sediments; the spores can be detected on fruits and vegetables and in seafood. The growing bacteria produce the
neurotoxin BT, which is often referred to as the most poisonous substance known to mankind [4]. Botulinum toxin A (BTA) is an inhibitor of acetylcholine release at the presynaptic neuromuscular junction. Clinically, BTA injections have been used safely for treatment of focal dystonia, muscle spasm and spasticity [5]. Inhibition of acetylcholine release results in regional decreased muscle contractility and muscle atrophy at the side of injection. The chemical denervation that results is a reversible process as axons re-sprout in about 3 to 6 months. Recent studies showed that BTA can also inhibit other neurotransmitters, including noradrenalin and sensory neurotransmitters [6]. Urological indications for BTA are bladder sphincter dyssynergia, neurogenic detrusor hyperactivity, urge incontinence and chronic prostatic pains [7]. In recent studies BTA has been used to treat benign prostatic hyperplasia and lower urinary tract symptoms [8,9]. Chuang et al. reported that chemical denervation using BTA causes down-regulation of ?1A-adrenergic receptors, in addition to prostate gland atrophy and apoptosis [10]. This toxin has been used to treat spinal cord injured patients who suffer from detrusor-sphincter dyssynergia. BTA toxin injections produce a reversible chemical sphincterotomy, which avoids a major surgical procedure (external sphincterotomy), and associated risks (bleeding, stricture, fistula formation). However the main disadvantage of BTA injection is repeated cystoscopy and toxin injections that are necessary to maintain results. In addition to classic indications of BTA in urology, we expand the clinical use of BTA for patients with traumatic spinal cord injury who empty the bladder by CIC and have difficulty with this procedure due to spastic bladder neck. To best of our knowledge, the use of this method has not been reported previously.

Materials and Methods

From December 1999 to April 2002, we followed, in our rehabilitation center, 307 male patients practicing CIC for neuromuscular dysfunction of the lower urinary tract due to spinal cord injury resulted from gunshot wound. In this study 5 paraplegic patients with traumatic spinal cord injury who emptied the bladder by CIC were evaluated. All patients had detrusor-external sphincter dyssynergia (DESD), proved by an urodynamic study with electromyography. These 5 male patients were 24.6±2.40 years old (22 to 28 years). All patients had no problem about using their hands; and catheterization of bladder was performed by themselves with 14 F hydrophilic catheters. All patients said that they had difficulty during CIC. All patients had gross urethral bleeding after CIC for several times, 3 of them had bladder neck or urethral injury and they were treated by temporary urethral stenting with an indwelling catheter for a period and antibiotic therapy. Pretreatment evaluation included urethrocystoscopic examinations. At urethrocystoscopy, we found normal urethra and spastic bladder neck in all patients (figure 1).

Figure 1: Appearance of bladder neck before Botox injection

For the treatment, we diluted 100 international units of BTA (Botox®) in 10 cc isotonic saline solution. Using a 21 F rigid urethrocscope and a collagen injection needle, a total of 100 units of BTA were injected into the bladder neck at the 3, 5, 7 and 9 o’clock positions. No anesthesia was required for any patient. All patients had transurethral foley catheter for 5 days after botulinum injection and were administered prophylactic 500 mg ciprofloxacin two times a day for 5 days. Cystoscopy was performed at 2nd week, and patients were followed for 168±26.83 days.
(120 to 180 days). Before and 3 weeks after the procedure, each patient was asked to define the degree of CIC difficulty with descriptive ratings from 0 (no difficulty) to 5 (the most difficult) and the results were noted.

**Results**

After BTA injection no acute complications, such as general paralysis or respiratory depression occurred. We took off transurethral foley catheters at 5th day and patients began CIC. All patients reported that they had no difficulty during CIC. Two weeks after botulinum injection, at urethrocystoscopic examinations we saw that bladder neck spasticity disappeared in all patients (figure 2). None of the patients became incontinent.

![Figure 2: Appearance of bladder neck after Botox injection](image)

Mean follow-up period was 168±26.83 days (120 to 180 days). After BTA injection, all patients stated that the treatment facilitated passage of catheter. The median degrees of CIC difficulty before and after procedure were 4 (3-4) and 0 (0-1), respectively and the difference was statically significant (p<0.005). During follow up period no complication due to CIC was detected (bleeding, false passage or stricture formation). However, the spasm occurred in all patients after a mean period of 118±23.87 days (90 to 150 days) and all patients re-experienced catheterization difficulties. Recurrence of spastic bladder neck was detected with urethrocystoscopy which was considered as the sign of the necessity of a new injection into the bladder neck.

**Discussion**

Intermittent catheterization has been routinely used for urinary retention more than 100 years in the past, but it has been eventually forgotten [11]. Since 1972, when Lapides et al. reintroduced clean intermittent catheterization and stressed the importance of regular emptying rather than the sterility of the technique, this procedure has revolutionized the management of difficult bladder emptying and it has been routinely used in the treatment of these patients [11]. Several long-term studies of CIC have reported good preventive or therapeutic effects on hydronephrosis, vesicoureteral reflux, urinary tract infection and incontinence [12]. Consequently, CIC today is an established technique for the management of neuromuscular dysfunction of the lower urinary tract in patients with spinal cord injury [13]. Recent studies show that some of the SCI patients have bladder neck spasticity because of their neurological problems and these patients have difficulty during CIC procedure that may lead some complications such as urethral and bladder neck injury, urethral bleeding, false passage or stricture formation [3]. Urethral false passage can complicate intermittent catheterization, especially in male patients, and induce gradual worsening of the situation. Immediate identification of this problem is required to institute appropriate corrective steps. Although transrectal ultrasound and retrograde urethrography can detect urethral false passage, urethrocystoscopy provides the most accurate diagnosis [14]. At our center all patients with acute urethral false passage were diagnosed by urethrocystoscopy. To prevent patients from such complications of intermittent self catheterization and to make catheterization easy for them our procedure seems to be a useful method without any local or systemic complications. Treating bladder neck spasticity, urethral catheter can be passed through bladder neck easily without damaging surrounding tissues. After BTA injection, all patients stated that the treatment facilitated passage of catheter. According to our knowledge...
it was the first use of BTA in bladder neck spasticity in spinal cord injured patients. BTA interferes with acetylcholine release from the nerve terminus and not with acetylcholine storage in the vesicles [15]. Affected muscles gradually lose the ability to contract. The effects of repeated toxin administration are cumulative, and the release of acetylcholine from the end plate is diminished and then inhibited. Denervation of skeletal muscle can cause atrophy. This chemical denervation and the resulting muscle atrophy have been used clinically to treat a variety of skeletal muscle dystonias and spasms [5]. Urological indications for BTA are bladder sphincter dyssynergia, neurogenic detrusor hyperactivity, urge incontinence and chronic prostatic pains [7,16]. In recent studies BTA has been used to treat benign prostatic hyperplasia and lower urinary tract symptoms too [7-9].

Chuang et al. reported that chemical denervation using BTA causes down-regulation of $\alpha_1$-adrenergic receptors, in addition to prostate gland atrophy and apoptosis [10]. Botulinum toxin A has been used to treat detrusor-sphincter dyssynergia in male patients since 1988 and subsequent reports confirmed its use for detrusor-sphincter dyssynergia in SCI men [5].

The denervation provided by the toxin is a reversible process, since new axons re-sprout in 3 to 6 months. For treatment of detrusor-sphincter dyssynergia, the duration of botulinum A effect has been reported to be approximately 3 months for a single injection [17]. We determined the re-injection time according to the patients complaints. In our experience, patients need re-injection about 118±23.87 days (90 to 150 days) after first injection.

Today, spinal cord injured patients have greatly improved life expectancy with morbidity and mortality similar to those of the general population. Recent epidemiological spinal cord injury studies show that improved health and life span became possible only when the renal insufficiency and mortality were successfully prevented [18]. When a false passage occurred during CIC we have several treatment methods such as indwelling catheter and suprapubic cystostomy. Most reports state that the healing period of urethral trauma with an indwelling catheter is 2 to 10 weeks [19]. But these treatment modalities have negative impacts on quality of life. So, preventing such patients from the complications of CIC is so important.

Having no any local or systemic complications, BTA injection to bladder neck seems to be a good method for preventing SCI patients with bladder neck spasticity from complications of CIC. Further studies are needed to find the exact value of this treatment on a daily practice as well as its efficiency on a long-term basis.

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Ultrasound-guided or direct cannulation of radial artery with guide-wire system in critically ill patients: A randomized comparison of two techniques

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Abstract: The aim of the study is to compare the results of ultrasound-guided radial artery cannulation with direct cannulation via guide-wire system with direct cannulation via palpation technique by using guide-wire system in critically ill patients. Critically ill 100 patients requiring radial artery cannulation according to their clinical status in the intensive care unit of Cardiovascular Surgery Department of Gulhane Military School of Medicine were enrolled. Patients were randomized into 2 groups. In group I radial artery cannulation was performed by ultrasound guidance, and in group II it was done by palpation method. Main study measurements included time required for insertion of radial artery catheter by the chosen technique, number of attempts at arterial cannulation, number of catheters used for successful cannulation, opposite radial artery cannulation, alternative artery cannulation, complications with related technique, and satisfactory blood pressure monitoring and blood sampling. Radial catheterization was performed in both groups successfully. Elapsed time for cannulation in ultrasound group was longer in the beginning, but with the completion of learning period this time meaningfully decreased. The number of total attempts were significantly less in the ultrasound group (p=0.003). There were also significant differences in average attempts at the same radial artery, opposite radial artery cannulation, total number of attempts, and average elapsed time in favor of Doppler group. Addition of Doppler ultrasound to guide-wire technique for radial artery cannulation for critically ill patients in the intensive care units makes this procedure easier, decrease the use of catheters and complication besides cost-effectiveness.

Key Words: Radial artery, echocardiography, Doppler, critical illness

Cannulation of the radial artery for invasive arterial blood pressure measurement and blood sampling is almost inevitable for critically ill patients in intensive care environments. Numerous techniques have been described for insertion of catheters such as direct cannulation with an over-the-needle approach, modified Seldinger technique, the liquid stylet technique, pressure curve directed technique etc.[1-4]. All of these techniques are suitable for cannulation. However it may be troublesome in some cases, if the patients are hypotensive or peripherally vasoconstricted. Especially for the pediatric cases, small radial artery caliber is another challenging problem for even the experienced physicians. Therefore sometimes it may be difficult, requiring multiple attempts and causing patient discomfort and suffering. Complications and hazards of insertion also described extensively.

Wasting time because of unsuccessful attempts and alternative artery cannulation, hand ischemia

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due to radial artery dissection, and hematoma due to puncture of artery are common complications of radial artery cannulation [5].

Radial artery can easily be identified by two-dimensional ultrasound. Ultrasound guidance may help preventing such type of complications [6]. The aim of the study is to compare the results of ultrasound-guided radial artery cannulation with direct cannulation via guide-wire system with direct cannulation via palpation technique by using guide-wire system in critically ill patients in the ICU.

Material and Methods

Critically ill a hundred patients who required radial artery cannulation according to their clinical status in the intensive care unit of Cardiovascular Surgery Department were enrolled in the study. This prospective and randomized study was approved by the local ethics committee of our institute and informed consents were taken from all patients. Before insertion of the radial artery catheter, the technique to be used was selected by random envelope. The hypothesis of this study was that radial artery cannulation could be more easily performed with guide-wire technique by ultrasound guidance especially in critically ill patients in the intensive care unit due to low arterial blood pressure or hand edema.

Patients were divided into two groups. Both groups consisted of 50 patients. In group I, radial artery cannulation was performed by ultrasound guidance, while it was done by palpation method in group II. Demographic and medical data were recorded, and blood pressure in the arm which the catheter was going to be inserted. Allen test was also conducted in all patients for detecting adequacy of ulnar artery flow with the help of pulse oxymeter.

The main study measurements included the time required for insertion of the radial artery catheter by the chosen technique detailed below; the number of attempts at arterial cannulation (each attempt being defined as a new skin puncture), the number of catheters used for successful cannulation, opposite radial artery cannulation, alternative artery cannulation, any complications with the related technique, and satisfactory blood pressure monitoring and blood sampling.

In both groups, radial artery cannulation was performed by the same doctor with a 20 G, 0.9 mm x 8 cm catheter over a 20 G thin-walled needle (Seldicath; Pastimed Division, Prodimed, Cedex, France).

Ultrasound-guided technique was performed as follows: The 5.5-7.5 MHz transducer of the ultrasound device (Sonos 2000, HP, USA) was cleaned with alcohol/clorhexidine. The skin at the insertion site was similarly disinfected. The transducer was applied to the skin and the radial artery was localized. A local anesthesia with 1 ml xylcaine was administered to the puncture area. Following the local anesthesia, the catheter was inserted slightly distal to the transducer and directed according to the ultrasound images. Skin puncture marked the timing start point. Successful arterial cannulation marked the end point of the timing process.

The palpation technique was performed as follows: The position of the artery was identified according to the palpation. Following disinfection and local anesthesia, needle was inserted through the skin and directed at a 45° angle toward the anterior wall of the artery. After artery was punctured and confirmed by a flashback of blood, a guide-wire was advanced into the arterial lumen. Then the needle was removed and arterial catheter was advanced over the guide-wire. Following the access of the catheter, guide-wire was removed and catheter was fixed to the forearm. Once again, timing was started at skin puncture and ended with successful cannulation.

In both groups, successful insertion of the catheter was verified by observing a transduced arterial blood pressure waveform. Furthermore, in both groups, the time for each attempt at cannulation was recorded in addition to the total time taken.

Statistical analyses were conducted by using SPSS software version 15.0 (SPSS Inc, Chicago, IL). Data were expressed as means± standard deviations. The proportions of successful insertion at the first attempt were assessed by means of Fisher's exact test. Mann-Whitney U test were applied for the comparisons of the number of attempts and number of catheters. The analysis of the time to success required three steps: A non-significant Kolmogorov-Smirnov test for nor-
mality was followed by the Levene test for equality of variances and finally, an appropriate Student's t-test was performed. Statistical significance was accepted at p<0.05.

Results

The mean age of the patients was 60.8±21.9 years in group I and 62.6±20.1 years in group II. Twenty eight of the patients were male in group I, and 29 of the patients were male in group II. Demographic data of the patients were summarized in Table 1. There was no statistically significant difference between groups in demographic data. Examination of radial artery pulses yielded 58 strong, 38 weak and 4 absent pulses in group I and the distribution of pulses demonstrated in Table 2. Power of pulses affected the success rates for cannulation proportionally.

Satisfactory results were obtained in 41 patients in group I and 30 patients in group 2 (<0.05). Although elapsed time for successful cannulation in ultrasound group was longer than the palpation group, after the completion of the learning period this longer time decreased. Total number attempts were significantly less in ultrasound group (p=0.003). There were also significant differences in average attempts at the same radial artery, opposite radial artery cannulation, total number of attempts, and average elapsed time in favor of Doppler group. All these data summarized in Table 3.

There was no important complication in both groups related with the procedures. Satisfactory blood pressure monitoring and blood sampling were achieved in both groups.

Table 1: Demographic data of the patients

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group I (n=50)</th>
<th>Group II (n=50)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>60.8±21.9</td>
<td>62.6±20.1</td>
<td>NS</td>
</tr>
<tr>
<td>Sex (M/F)</td>
<td>28/22</td>
<td>29/21</td>
<td>NS</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>25.9±4.8</td>
<td>25.7±5.1</td>
<td>NS</td>
</tr>
<tr>
<td>Number of patients with (%)</td>
<td>NS</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>&quot; IHD</td>
<td>21(42)</td>
<td>23(46)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; CHF</td>
<td>11(22)</td>
<td>9(18)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; AMI</td>
<td>3(6)</td>
<td>4(4)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; VHD</td>
<td>10(20)</td>
<td>11(22)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; AA</td>
<td>5(10)</td>
<td>3(6)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; DM</td>
<td>20(40)</td>
<td>18(36)</td>
<td>NS</td>
</tr>
<tr>
<td>&quot; Smoking</td>
<td>19(38)</td>
<td>17(34)</td>
<td>NS</td>
</tr>
<tr>
<td>Baseline heart rate, bpm</td>
<td>82.4±13.7</td>
<td>80.3±12.8</td>
<td>NS</td>
</tr>
<tr>
<td>Baseline systolic BP, mmHg</td>
<td>112.3±22.9</td>
<td>110.8±23.5</td>
<td>NS</td>
</tr>
</tbody>
</table>

M/F: Male/Female, BMI: Body mass index, IHD: Ischemic heart disease, CHF: Congestive heart failure, AMI: Acute myocardial infarction, VHD: Valvular heart disease, AA: Aorta aneurysm, DM: Diabetes mellitus, BP: Blood pressure, BPM: Beats per minute
NS: not significant

Table 2: Evaluation of radial artery pulses with palpation and success rates.

<table>
<thead>
<tr>
<th>Sense with palpation</th>
<th>Group I (n=50)</th>
<th>Group II (n=50)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of RA attempt</td>
<td>No of RA attempt</td>
<td>No of RA attempt</td>
</tr>
<tr>
<td>No of at 1st attempt</td>
<td>29</td>
<td>96%</td>
<td>31</td>
</tr>
<tr>
<td>Weak</td>
<td>19</td>
<td>64%</td>
<td>18</td>
</tr>
<tr>
<td>Absent</td>
<td>2</td>
<td>50%</td>
<td>1</td>
</tr>
</tbody>
</table>

No: number, RA: radial artery, NS: not significant
Discussion

Radial artery cannulation is generally accepted to be a low risk procedure, although most data concerning insertion technique and their complications have been obtained from previously healthy patients undergoing elective operations [5]. However, in some cases it may be troublesome if the patients are hypotensive and peripherally vasoconstricted as the critically ill patients in the ICU.

One of the most important factors for failure of cannulation with direct technique was inability to advance the catheter even the needle appeared to be inside the artery. Mangar et al. [7] suggested that this problem may result from a tangential approach to the artery, tortuosity of the artery, or radial artery spasm. Another important cause is the impingement of the tip of the needle on the posterior wall. In this position a free flashback of blood will be obtained although the catheter is unable to pass the needle tip [8,9]. However the guide-wire catheter can be advanced into the artery even if the posterior wall impingement occurs. Rarely, as a result of the needle puncture dislocation; the guide-wire may not be advanced into the artery. Therefore guide-wire assisted cannulation had more favorable results compared with the direct technique. Yildirim et al. [5] showed the superiority of guide-wire technique over direct technique. And we extrapolated that addition of a Doppler ultrasound to guide-wire technique may improve the success rate.

Therefore, this study demonstrate that radial artery catheters may be inserted by ultrasound guidance and that using the device both significantly increase the rate of successful catheter insertion on the first attempt and decreases the total number of attempts required to insert the catheter. Furthermore, the study also demonstrates a trend toward decreased overall time required insert the catheter. Although the use of ultrasound prolong the actual insertion time at the beginning of the study, thorough the end of the study the insertion time gradually decreased with completion of learning period and experience. But this time prolongation at the beginning of the study compensated by the decrease in the number of attempts required for the successful catheter insertion. Presumably, the performance of fewer attempts in the ultrasound group also explains the decrease in the number of used catheters.

Bed side echocardiography is available almost in all cardiovascular surgery ICUs and Doppler flow probes of these devices may be easily used by the physicians for this aim. Especially in the absence of an experienced anesthesiologist and in emergency situations even the cardiovascular surgery residents may succeed the cannulation by the help of ultrasound guidance.

Satisfactory blood pressure monitoring and sampling of blood pressure are directly related to catheter length. Hematoma around the artery may compress the distal artery and cause thrombosis, which may propagate to the proximal section of the artery. When the length of the catheter is

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group I (n=50)</th>
<th>Group II (n=50)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients whose arterial catheter successfully inserted at the first attempt</td>
<td>41 (82%)</td>
<td>30 (60%)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Average attempts at same radial artery</td>
<td>1.4±0.9</td>
<td>2.3±0.8</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Opposite radial artery cannulation</td>
<td>1</td>
<td>3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Alternative artery cannulation</td>
<td>0</td>
<td>1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total number of attempts</td>
<td>74</td>
<td>107</td>
<td>0.003</td>
</tr>
<tr>
<td>Average elapsed time (secs)</td>
<td>70.3±87.7</td>
<td>90.1±99.2</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Average time for successful first attempt (secs)</td>
<td>27.3±3.1</td>
<td>15.9±1.9</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Average number of cannulae used per patient</td>
<td>1.1±0.3</td>
<td>1.5±0.7</td>
<td>0.04</td>
</tr>
<tr>
<td>Hand ischemia</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hematoma</td>
<td>1</td>
<td>3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Satisfactory blood pressure monitoring and sampling</td>
<td>50</td>
<td>49</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>
small, it may be surrounded by the thrombosis, which is a common cause of catheter failure for pressure monitoring and sampling. Since guidewire catheters are longer than over-the-needle catheters, monitoring and blood sampling were also superior in both groups [5]. In this study in both groups the results for satisfactory monitoring and blood sampling.

As a conclusion, addition of Doppler ultrasound to guide-wire technique for radial artery cannulation for critically ill patients in the intensive care units makes this procedure easier, decrease the use of catheters and complication besides cost-effectiveness even in the patients with low arterial pressure or in situation of pulselessness due to edema. In the absence of an experienced anesthesiologist, even the cardiovascular surgery residents may insert these cannulas very successfully after some practice with Doppler US.

References

Influenza vaccination non-acceptance among nurses in Greek Military Hospitals

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Abstract We conducted a survey to investigate reasons for influenza vaccine refusal among nurses in Greek Military Hospitals. The survey took place at seven Greek Military Hospitals all over Greece and included two hundred forty five nurses. For data analysis we used Chi-square statistic test with Yates' correction and the Fisher's exact test. The self reported influenza vaccination rate among nurses for 2007 immunization season was 21%. Main reasons for refusing vaccination were perception of not being at risk for influenza (41%) and a general apathy for vaccination (20%). Registered nurses, under 33 years old and with less than 11 years in service had higher odds for declining the vaccine (p<0.05). Continuous education strategies to confute misconceptions about the vaccine and increase vaccination coverage should address to encourage young registered nurses to uptake influenza vaccine so as to prevent influenza, influenza like illness and transmission of virus to high risk patients.

Key words: health care workers, influenza vaccination, attitudes

Introduction

Annual influenza vaccination of health care worker's has been recommended since 1986 in order to reduce nosocomial transmission of influenza to high risk patients [1]. Health care providers constitute a significant reservoir for nosocomial influenza and that's why they are among occupational target groups for vaccination [2]. Despite recommendations by health authorities vaccine uptake among health care workers remains rather low [3-8]. Thus efforts to increase low vaccination coverage among hospital staff are difficult to achieve without an understanding of the barriers to vaccination. Reasons cited from hospital workers for not receiving influenza vaccine were strikingly similar across studies [9-13]: concern about vaccine's side effects or efficacy, inconvenience, ignorance of vaccination recommendations. We conducted a prospective cross sectional survey to identify reasons for declining national recommendations for influenza vaccination among nurses in Greek Military Hospitals.

Materials and Methods

The study took place in seven Military Hospitals located all over Greece. The study was reviewed and approved by each Hospital Review Board prior to data collection. Subjects consisted of all registered nurses and nurse aides who were working at the hospital during the survey as permanent staff and had direct contact with patients [14]. Non-permanent nursing personnel, nurses that had no direct contact with patients and students were excluded from the study. Influenza vaccine was available to all hospital employees from Infection Control Committee, free of charge. Anonymous self-administrated questionnaires were distributed to nurses after the conclu-
sion of known influenza activity (end of March 2007) and turned back one week later. The questionnaire was developed by the researchers after a thorough review of literature so as to elicit information about study purposes [15-18]. In order to establish content validity, we tried to achieve a representative sample. Internal consistency reliability was established with Cronbach’s, which found to be 70%. The survey instrument included a number of “forced choice” questions covering the following areas: a) sociodemographics and employment characteristics, b) 2007 influenza vaccine acceptance or no, c) reasons for declining the influenza vaccine marking from a list of literature findings. Data were analyzed using SPSS-10 for Windows software. Comparison of the responses was performed with the use of Chi-square statistic test with Yates’ correction and the Fisher’s exact test.

Results

A total of 245 of 410 questionnaires were returned properly answered from the nurses working in seven Greek military hospitals located all over Greece, who participated in the study (60% response rate). The respondents spent their time working in an impatient unit and mostly in close contact with patients during an average workweek. There were 138 registered nurses and 107 nurse aides of whom 29 were men and 216 were women. Demographic and employment characteristics of the respondent staff are listed in Table 1. The overall influenza non-vaccination rate was 79% (193/245). Main reasons for refusal influenza vaccination were belief that they don’t need the vaccine (41%) and just no will to get vaccinated (19%) (Table 2). Analysis of reasons that nurses cited for declining influenza immunization demonstrated that registered nurses, under 33 years old and with less than 11 years in service reported that they a. believed that they didn't need the vaccine (77% vs 33%, 75% vs 25%, 73% vs 27%, p<0,05), b. didn't will to get vaccinated (78% vs 22%, 70% vs 30%, 67% vs 33%, p<0,05) and c. had not available time to get injected (63% vs 37%, 68% vs 32%, 63% vs 37%, p<0,05) (Table 3).

Table 1. Staff sociodemographics and occupational characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-33 years old</td>
<td>113</td>
<td>46</td>
</tr>
<tr>
<td>34-65</td>
<td>132</td>
<td>54</td>
</tr>
<tr>
<td>Years in service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-11</td>
<td>121</td>
<td>49</td>
</tr>
<tr>
<td>12-33</td>
<td>124</td>
<td>51</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Nurse (RN)</td>
<td>138</td>
<td>57</td>
</tr>
<tr>
<td>Nurse Aid (NA)</td>
<td>107</td>
<td>43</td>
</tr>
<tr>
<td>Hospitals’ capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;250 beds</td>
<td>155</td>
<td>63,3</td>
</tr>
<tr>
<td>&lt;250 beds</td>
<td>90</td>
<td>36,7</td>
</tr>
<tr>
<td>Hospitals’ location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athens</td>
<td>163</td>
<td>66,5</td>
</tr>
<tr>
<td>Thessalonica</td>
<td>45</td>
<td>18,4</td>
</tr>
<tr>
<td>Larissa</td>
<td>28</td>
<td>11,4</td>
</tr>
<tr>
<td>Crete</td>
<td>9</td>
<td>3,7</td>
</tr>
</tbody>
</table>

Table 2. Reasons for declining influenza vaccination among nurses of Greek Military Hospitals (N=193)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Reporting rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belief that they don't need the vaccine</td>
<td></td>
</tr>
<tr>
<td>No will to get vaccinated</td>
<td>18,8 46</td>
</tr>
<tr>
<td>No available time</td>
<td>7,8 19</td>
</tr>
<tr>
<td>Concern about vaccine's side effects</td>
<td>6,5 16</td>
</tr>
<tr>
<td>Not informed about hospital's influenza vaccination program</td>
<td>2,9 7</td>
</tr>
<tr>
<td>Not reported</td>
<td>2 5</td>
</tr>
</tbody>
</table>
Table 3. Reasons that nurses of Greek military hospitals declined influenza vaccine and sociodemographics and occupational characteristics.

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Specialty</th>
<th>Age group</th>
<th>Service ages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RN</td>
<td>NA</td>
<td>20-33</td>
</tr>
<tr>
<td>Belief that they don't need it</td>
<td>77/100</td>
<td>77*</td>
<td>33/100</td>
</tr>
<tr>
<td>No will to get vaccinated</td>
<td>36/46</td>
<td>78*</td>
<td>10/46</td>
</tr>
<tr>
<td>No available time</td>
<td>12/19</td>
<td>63*</td>
<td>7/19</td>
</tr>
<tr>
<td>Concern about vaccine's side effects</td>
<td>8/16</td>
<td>50</td>
<td>8/16</td>
</tr>
<tr>
<td>Not informed about hospital's influenza vaccination program</td>
<td>5/7</td>
<td>71</td>
<td>2/7</td>
</tr>
<tr>
<td>Not reported</td>
<td>3/5</td>
<td>60</td>
<td>2/5</td>
</tr>
</tbody>
</table>

RN: registered nurse, NA: nurse aid, * Difference between responses of groups (p<0.05)

Discussion

In this study the main reason cited for poor vaccine uptake was a basic lack of knowledge about vaccine's necessity for this particular occupational group. Similar findings is often reported [7,11,12,19], pointing out the fact that for several reasons health care workers in general estimate that they are not at risk for contacting and transmitting influenza virus. A small percentage of the respondents (3%) of our study also claimed that they were unaware about their facility of influenza vaccination program. Weingarten et al. also report that health care workers would receive influenza vaccine if they knew that it was a national policy [8]. Lack of knowledge about vaccine's efficacy and safety and lack of information about Worldwide, National or Hospital's recommendations about vaccinations issues for health care workers seem to be the real reasons for vaccine refusal. However, it must not be forgotten that influenza vaccination is primarily recommended for the safety of influenza complications of high risk patients [2]. Many of our respondents appeared to demonstrate a general apathy toward vaccination without giving a specific reason. Canning et al. give similar findings from their study regarding nurses in Liverpool hospitals [13,19]. These findings underline the need for further promotion efforts for increasing vaccine uptake. Non-available time was the third most commonly reported reason among nurses in Greek Military Hospitals for vaccine refusal. In addition, several researchers reported higher vaccination rates when a facility offered the vaccine on site solving the inconvenience issue [20-22]. Since the vaccine is available free of charge for hospital staff, wider dissemination of vaccine availability and strategies to increase convenience is warranted.

Nurses concern about side effects and adverse reactions of influenza vaccine and decline vaccination. Similar concerns were shared by health care workers in other studies and they had refused vaccine uptake in the same way [7,11,23]. However, many researches suggest that the influenza vaccine is not associated with rates of side effects [24-26]. This finding points out the opportunity to enlighten staff through continuous education about misconceptions regarding the effects of immunization.

The results of this survey underscore the need for continued efforts in immunization of health care providers by infection control committees and hospitals administrators. Recommendations by themselves, wherever they come from, can't lead to acceptable influenza immunization rates. Each institution must take an active role in promoting influenza immunization. As far as Greek Hospitals are concerned, focus must be given to younger and new hired nurses in order to understand and comply with vaccination recommendations. Further studies are also necessary to define the success of implemented strategies.
References


Preventive medicine during the preparation of Bulgarian military contingents for participation in the missions abroad

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Abstract: The participation of the military contingents in missions abroad is associated with changes in living standards and hygiene of military personnel and poses a risk of deterioration of the epidemiological status. The article presents the preventive medical aspects of the military medical service activities during the preparation for participation in missions. The observations of these mission driven hygiene and counter-epidemic activities are systematized with a view of the optimization of the prophylactic measures.

Key words: missions, preventive medicine, hygiene, epidemics

The participation of Bulgarian Military Medical Service in missions abroad began in 1904, but the medical support to Bulgarian military contingents during multinational peace-keeping and peace-support operations is a comparatively new obligation, since such operations are carried out recently. Our experience so far shows the possibility of many hygienic and epidemiological risks, significant changes in living standards of military personnel as well as threats, ensuing from the geographic area and climate. All this pose increased requirements in preparation phase of mission with a view to protect health and efficiency of the military personnel [1].

The first attempt to present the preventive medicine tasks of the medical service in pre-deployment phase was made by D. Mitov in 1992, when one Bulgarian battalion "Blue helmets" was prepared for mission in Cambodia [2]. Together with this experience, in addition to the current Bulgarian Army and NATO documents, it is possible to determine several aspects in the activities of the medical service concerning the preventive medicine issues in the preparation phase:

1. Clarifying the characteristics of medico-geographical, ecological and epidemiological conditions of host nation, area of operation and the area of the camp.

In these fields data are searched, that can direct the medical service's attention to possible negative effects on the health of military personnel, especially during prolonged deployment periods. The medical intelligence is responsible for gathering of necessary information concerning:

* Assessment of the rate and structure of epidemic diseases in the host nation, their types and prevalence; whether there are developed and functioning national programs of immunization and epidemiological surveillance system. It is necessary to pay special attention to the rates and dissemination of HIV infection and tuberculosis in the local population;

* Collecting current information about endemic communicable diseases in the area of operation and mainly for diseases that may pose high epidemiological risks such as diarrheas, anthrax, plague, hemorrhagic fevers etc. The characteristics of their dissemination, tendencies and clini-

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cal variations should also be evaluated;
* Presence and condition of natural foci of infections (active and inactive); which biological species are natural reservoirs of causative agents (rodents, domestic and wild animals), vectors (arthropods) and factors that favor transmission;
* Assessment of climate, nature and other premises that could affect the spreading of communicable diseases;
* Research the cultural level, characteristics and status of live of local population again as the factors influencing the spreading of infectious diseases; sexual culture and behavior of young people and the prevalence of sexually transmitted diseases; the possibility for gathering of a large number of people during religious and other events;
* Existence of strains that are resistant to antibiotics;
* Determination of the climate conditions in the area of operation in order to the prepare the appropriate military battle dress and equipments with special concern about the level of risk for development of heat and cold injuries;
* Estimation of the daily demands of potable and non-potable water and their supplies for drinking and hygiene; clarifying the quality of the potable water in accordance with NATO/national requirements;
* The condition of public infrastructure - water-pipes, sewing system , purifying assets etc.;
* Presence and types of industrial pollutions, radiological and toxic risks and the established practice for the waste disposal.
* The characteristics of rodents, insects and other species that may be of epidemiological importance;
* Dangerous and poisonous flora and fauna in the area of operation and the camp area - dissemination, antidotes and opportunities of supply. These data have an informative value when are collected in advance, right after receiving a mission, in the early mission planning stages. Therefore, participating in the mission planning conferences is not important only for the medical intelligence specialists, but also preventive medicine specialists. Their joint efforts lead to development of the Mission Force Health Protection Program [3,4].

Due to the possibility of quick changes in conditions, an important question is stand out - the necessity to set up a system of permanent field epidemiological surveillance. Main tasks of such system should include the following: Collecting, processing and analyzing epidemiological, hygiene and ecological data; determination and categorization of existing hazardous factors in the area of operation. A similar system has already been developed and implanted in France. The introduction of NATO - Disease Surveillance System is forthcoming. The system of epidemiological surveillance of communicable diseases is an important component of this ambitious project.

2. Precise medical and psychological check-up of the personnel
The selection of physically, medically and psychologically fit personnel is one of the most important measures during the preparation phase. The goal of this measure is that obscure sources of infection among the newly formed units should be avoided. This is particularly important for some diseases, such as Hepatitis A / B and HIV. These diseases could present in long term carriers and could provoke risk to medical staff and soldiers that probably give buddy aid during operation field and as well as participate in extraordinary blood donation campaigns.

The essential conditions for the successful missions are the psychological check-up and selection of the servicemen as well as their purposeful psychological training prior to their deployment. The psychological instability which can be seen in a part of the personnel during a long term deployment, often leads to appearance and progression of reactive psychosis, due to increased risk, divorce, family problems etc. The attentive medical and psychological check-up, as well as the comprehensive psychological training during the preparation phase, decrease the probability of development of such kind of conditions.

3. Immunization and chemoprophylaxis of personnel.
Current immunoprophylaxis, respectively chemoprophylaxis allow great opportunities for preventing outbreaks and spreading of infections within military units. These measures have to be in compliance with requirements of STANAG 2037 "Vaccination of NATO forces", and also
should meet with the epidemiological risks and informations that have been received from medical intelligence in the area of operation. [5]. Former Bulgarian practice in drafting volunteers for peacekeeping operations, shows that period from receiving the mission until deployment is not long enough for application of all necessary antigens. For example setting up of contingent for Cambodia in 1992 had required 6 antigens for 45 days covered by antihistamine drugs in during intensive training process. Such applications additionally decrease the time for training during the preparation phase. Also there is increased risk of anaphylaxis and compromised immune system. Therefore selection of bio-products for immunization and vaccination schemes should be defined more accurately.

Prophylaxis of malaria is an important element of infectious diseases prevention, because a great number of peacekeeping operations are conducted in countries in which, this disease is prevalent (Afghanistan, Iraq). In pre-deployment phase, preventive measures should include: study the recommendations in "WHO Expert Committee on Malaria" and "WHO International Travel and Health" in respect of epidemiological and clinical characteristics in area of responsibility, providing with most appropriate medicines, training of medical staff about side effects and necessity of alternatives in reserve [6,7]. Personnel must possess and apply personal protective measures against insects, such as repellents for exposed skin and impregnated with permethrin battle dress uniform (BDU).

A modern tendency of contemporary immunology is the use of immune-modulators. Such agents have already been applied in Bulgarian contingents that were deployed in Iraq and Afghanistan. In view of frequent contact with uncommon germs and unfavorable impact of physical and psychological pressure, that could lead to depression of immunological status, we think their usage is perspective.

Of great importance are the clarifying the probability of application of biological weapons (BW) and necessity of preliminary prophylaxis against BW agents. The medicine (vaccine) for prophylaxis, its dosage, necessary quantity, decision making and usage control should be specified Therefore, all military units that are determined for deployment in the future should be immunized for preventable infectious diseases and for BW agents that may be utilized by enemy.

4. Preventive medicine training for personnel. Nowadays diseases and non-battle injuries (DNBI) are greater threats than battle injuries (BI) for the success of mission. Forces that are deployed to different areas of the world could encounter many health risks such as exotic and dangerous infectious diseases as well as to be exposed to adverse environmental factors. This imposes the conduction of training of medical staff and the rest of the troops in preventive medicine measures. This training must be based on STANAG 2122 [8]. Minimum training should include basic principles of preventive medicine, prophylactic measures for key infectious diseases, and personnel hygiene and k information about environmental risks. This training should be expanded with NBC protection issues [9]. Currently, training of medical staff is performed within the departments of Military Medical Academy. Non medical staff is trained by medical officers at training base.

Surgical teams from Bulgarian Armed Forces participate in missions abroad and are deployed at several field hospitals in Afghanistan. The nature of their activities, case load and difficulties to keep the hygiene in the medical facilities contribute to high risk of healthcare associated (nosocomial) infections. All this pose the necessity of education and training of military medical personnel concerning nosocomial infection prevention and hospital hygiene.

5. Manning and equipment of medical unit. When relatively bigger contingent (battalion or higher) is prepared for mission, it is necessary to include a preventive medicine specialist or even a team into medical staff, because of specificity of preventive measures activities. This especially should apply, if Bulgaria be a leading nation in the operation. In addition, it is important to equip the preventive medicine team with means for hygiene control, decontamination, especially water disinfection and malaria and influenza prophylaxis drugs.

6. Collaboration with logistics units about
food, water, protective equipment and waste disposal.
Collaboration must include the following:
a. Determination of average energy expenditures in respect of physical demands and climate. Preparation a list of products and optimal combat rations.
b. Taking into account the experience of Bulgarian Armed Forces from Iraq and Afghanistan, it is important to find the best solution for appropriate BDU and other equipment in advance.
c. Considering and recommending the most acceptable manner for waste disposal, including the problem of disposal of dangerous medical waste.
This scheme depicts the almost all aspects of hygienic and counter-epidemic activities in preparation phase. Bulgarian military medical service has been repeatedly using it. Observations and evaluations point out that preventing measures directly contribute the successful missions. It is confirmed that a serious epidemics and hygiene failure have not been occurred in any mission Bulgarian Army participated [10,11].

Conclusion
The accurate determination of hygienic and counter-epidemic tasks in preparation phase has a great impact on the preventive activities of medical service in missions. The preventive military medicine has activities in many aspects and its effectiveness in missions depends on combined methods and achievements of the medical reconnaissance, clinical medicine, tropical medicine, military epidemiology and hygiene, immunology, etc. The experience which was gained during the former operations of medical service is an important for improving the preventive measures that may be needed.

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9. STANAG 2358 "First Aid and Hygiene Training in NBC Operations
Abstract The field of infectious disease is vast, complex and rapidly expanding. New advances in diagnostic testing, the development of new antimicrobial therapies and even the emergence of novel infectious diseases require diligent study by medical practitioners to remain current. Method: systematic review. Results: International travelling can pose various risks to health, depending on the characteristics of both the traveller and the travel. Travellers may encounter sudden and significant changes in altitude, humidity, microbes and temperature, which can result in ill-health. In addition, serious health risks may arise in areas where accommodation is of poor quality, hygiene and sanitation are inadequate, medical services are not well developed and clean water is unavailable. Conclusions: This review article's purpose is to highlight the details and impact of four significant diseases that pose a threat to public health. Specifically issues such as the cause, transmission, geographical distribution, nature of disease and precautions of SARS, Influenza, Chikungunya and Avian Flu.

Key words: emerging infectious diseases, travel medicine, tropical diseases, SARS, avian flu

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can result in ill-health. In addition, serious health risks may arise in areas where accommodation is of poor quality, hygiene and sanitation are inadequate, medical services are not well developed and clean water is unavailable. This review article's purpose is to highlight the details and impact of four significant diseases that pose a threat to public health. Specifically we will talk about issues such as the cause, transmission, geographical distribution, nature and precautions of SARS, Influenza, Chikungunya and Avian Flu.

**Background**

Important health organizations with a national or worldview of disease (e.g., the Centers for Disease Control and Prevention and the World Health Organization) have restructured themselves to place greater emphasis on infectious diseases and rapid responses to epidemics, wherever they emerge. Developed nations, recognizing the threat to their economic welfare and social stability, have poured increasing resources into prevention, detection, surveillance, and treatment of emerging infectious diseases and pledged to fight infectious diseases around the world in various cooperative efforts. Funds to support research aimed at understanding and controlling emerging infectious diseases have increased significantly over the past decade as governments have recognized the importance of this threat [1].

In addition, we focus on specific emerging infectious diseases of increasing interest to both the scientific community and the general public, as SARS, Influenza, Chikungunya and Avian Flu. For these diseases we examine the epidemiology (Cause, Transmission, and geographical distribution), clinical picture (nature of disease), treatment and prevention (Risk for travellers, Prophylaxis, Precautions).

**1 SARS**

**1.1 Cause**

Severe acute respiratory syndrome (SARS) is an often fatal infectious respiratory disease with prominent systemic symptoms. It is caused by a novel coronavirus, SARS coronavirus (SARS-CoV), which was responsible for a global outbreak from November 2002 to July 2003. SARS-CoV is thought to be an animal virus from an as-yet uncertain-animal reservoir, perhaps bats, that spread to other animals (civets) and first infected humans in the Guangdong province of southern China in 2002 [2,3,4,5]. SARS-CoV is a zoonosis that initially affected wild animals, possibly bats, and subsequently spread to exotic animals. The virus can be identified by reverse transcriptase polymerase chain reaction (RT-PCR) in blood, plasma, respiratory secretions, and stool. Specific antibody is detected in acute and convalescent sera from patients by indirect fluorescent antibody (IFA) testing and enzyme-linked immunosorbent assay (ELISA) targeting the surface spike (S) protein.

**1.2 Transmission**

An epidemic of SARS affected 26 countries and resulted in over 8000 cases in 2003. Since then, a small number of cases have occurred as a result of laboratory accidents or, possibly, through animal-to-human transmission (Guangdong, China) [2,3,4,5]. Transmission of SARS-CoV is primarily from person-to-person. It occurs mainly during the second week of illness, which corresponds to the peak of virus excretion in respiratory secretions and stool, and when cases with severe disease start to deteriorate clinically.

**1.3 Nature of the disease**

Symptoms are flu-like and include fever, malaise, muscle aches and pains (myalgia), headache, diarrhoea, and shivering (rigors). No individual symptom or cluster of symptoms has proved to be specific for a diagnosis of SARS[2,3]. Although fever is the most frequently reported symptom, it is sometimes absent on initial measurement, especially in elderly and immunosuppressed patients. Cough (initially dry), shortness of breath, and diarrhoea present in the first and/or second week of illness. Severe cases often develop rapidly, progressing to respiratory distress and requiring intensive care.

**1.4 Geographical distribution**

The distribution is based on the 2002-2003 epi-
The disease appeared in November 2002 in the Guangdong province of southern China. This area is considered as a potential zone of re-emergence of SARS-CoV [5]. Other countries/areas in which chains of human-to-human transmission occurred after early importation of cases were Hong Kong Special Administrative Region of China and Taiwan (Province of China), Toronto in Canada, Singapore, and Hanoi in Vietnam. In other countries, imported cases did not lead to local outbreaks.

1.5 Risk for travellers

Currently, no areas of the world are reporting transmission of SARS. Since the end of the global epidemic in July 2003, SARS has reappeared four times - three times from laboratory accidents (Singapore; Taiwan, Province of China), and once in southern China where the source of infection remains undetermined although there is circumstantial evidence of animal-to-human transmission[6,7,8]. Should SARS re-emerge in epidemic form, WHO will provide guidance on the risk of travel to affected areas. Travellers should stay informed about current travel recommendations. However, even during the height of the 2003 epidemic, the overall risk of SARS-CoV transmission to travellers was low.

1.6 Prophylaxis

None. Experimental vaccines are under development.

1.7 Precautions

Follow any travel recommendations and health advice issued by WHO[5,6,7,8]. Four specific measures are important in the infection control practice for SARS: hand washing and the wearing of masks, gowns, and gloves. The quantity of exposure is related to the duration of hospital stay of SARS patients. A longer exposure results in higher chance for procedural lapses to occur, which can result in nosocomial spread [8,9].

1. Patient-related risk (exposure to a confirmed or suspected SARS case, superspreading events, triage areas, patient with fever of unknown origin, etc.)
2. Procedure-related risk (ICU, procedure room such as bronchoscopy room or x-ray department, area serving SARS patients, dirty utility room, etc.)
3. Direct patient contact or activities with risk of exposure to blood, body fluids, secretions, excreta, and contaminated items.
4. In addition, procedures with high risk of generating aerosols (e.g., resuscitation, high-flow oxygen) and involving prolonged very close contact with affected patients require:
   * N95 respirator (surgical mask may suffice for non-aerosol generating procedures)
   * a linen or disposable gown
   * full-face shield or eye shield
   * Latex gloves (only for procedures with exposure to blood and body fluid, secretion, excreta, and contaminated items)
   * goggles (only for aerosol-generating procedures)
   * disposable cap (optional)

2. INFLUENZA

2.1 Cause

An influenza virus of types A, B and C. Type A occurs in two principal subtypes (H1N1 and H3N2). Type A viruses cause most of the widespread influenza epidemics, type B viruses generally cause regional or sporadic outbreaks, and type C cause mild disease in the form of common colds and bronchitis in children. Influenza viruses evolve rapidly, changing their antigenic characteristics, so that vaccines need to be modified each year to be effective against currently circulating influenza strains [10, 11]. Other subtypes of influenza A viruses occur in animals and all 16 HA and 9 NA subtypes are found in birds (mainly in water fowl) inter-species transmission (1918 pandemic) and viral reassortment (1957, 1968 pandemics) may give rise to new subtypes able to infect humans. Influenza virus is usually a self-limited, acute viral respiratory illness that has the potential to cause significant morbidity and mortality of global dimensions. It typically occurs in regional epidemics lasting 8 to 10 weeks during the winter months. During an average epidemic in the United States, approximately 30,000
deaths occur in excess of what would be normally observed. Put in perspective, influenza kills more Americans every year than any other infectious disease including AIDS. Every decade or so, changes in the virulence and antigenic makeup of influenza viruses permit these viruses to span the globe in a nonseasonal pandemic characterized by a high attack rate and a mortality rate in excess of three times that seen during a typical year. The most dramatic example of a severe pandemic occurred between 1918 and 1919, when the "Spanish flu" killed approximately 700,000 Americans during a 12-week period. This figure is even more dramatic when one considers that in 1918 the U.S. population was only 1/3 of what it is today and that most of the deaths occurred among young adults between the ages of 20 and 45 years. It is estimated that as many as 50 million persons worldwide died during this same period [11].

2.2 Transmission

Respiratory transmission occurs mainly by droplets disseminated by unprotected coughs and sneezes. Short-distance airborne transmission of influenza viruses may occur, particularly in crowded enclosed spaces. Hand contamination and direct inoculation of virus is another potential route of spread.

2.3 Nature of the disease

An acute respiratory infection of varying severity, ranging from asymptomatic infection to fatal disease [12]. Classic influenza symptoms include fever with rapid onset, sore throat, cough and chills, often accompanied by headache, coryza, myalgia and prostration. Influenza may be complicated by viral or more often bacterial pneumonia. Illness tends to be most severe in the elderly and in infants and young children [13], and in immunocompromised hosts. Death resulting from seasonal influenza occurs mainly in the elderly and in individuals with pre-existing chronic diseases.

2.4 Geographical distribution

Worldwide [14,15,16]. In temperate regions, influenza is a seasonal disease occurring typically in winter months: it affects the northern hemisphere from November to April and the southern hemisphere from April to September. In tropical areas there is no clear seasonal pattern, and influenza may occur at any time of the year. Activity may occur year-round in the tropics.

2.5 Risk for travellers

Travellers, like local residents, are at risk in any country during the influenza season. In addition, groups of travellers that include persons from areas affected by seasonal influenza (e.g. cruise ships) may experience out-of-season outbreaks. Travellers visiting countries in the opposite hemisphere during the influenza season are at special risk, particular if they do not have some degree of immunity through regular vaccination. The elderly, people with pre-existing chronic diseases and young children are most susceptible to complications.

2.6 Prophylaxis

Vaccination, should start before the of the influenza season [17, 18]. However, vaccine for visitors to the opposite hemisphere may not be obtainable before arrival at the travel destination. For travellers in the highest risk groups for severe influenza who have not been or cannot be vaccinated, the prophylactic use of antiviral drugs such as zanamivir or oseltamivir is indicated in countries where they are available. Amantadine and rimantadine may also be considered when the circulating strains are known to be susceptible. However, the latter drugs are not active against influenza B, and high frequencies of resistance in H3N2 and less often H1N1 viruses make then unreliable for prevention currently.

2.7 Precautions

Whenever possible, avoid crowded enclosed spaces and close contact with people suffering from acute respiratory infections [19]. Handwashing after direct contact with ill persons or their environment may reduce the risk of illness [20]. Ill persons should be encouraged to practise
cough etiquette (maintain distance, cover coughs and sneezes with disposable tissues or clothing, wash hands).

3. CHIKUNGUNYA

3.1 Cause

Chikungunya virus is an Alphavirus (Togavirus family). Chikungunya Virus (CHIKV) was first isolated during a 1952 epidemic in Tanzania. Chikungunya comes from Swahili, meaning "that which bends up," and refers to the characteristic posture assumed by patients typically suffering severe joint pains. Carey [21] presented convincing historical evidence that CHIKV has occurred sporadically in India and Southeast Asia for at least 200 years. The known geographic distribution of the virus includes most of sub-Saharan Africa, India, Southeast Asia, Indonesia, and the Philippines [22, 23].

3.2 Transmission

Transmission Chikungunya is transmitted by mosquitoes, including several Aedes species which bite during daylight hours. Two important vectors are Aedes aegypti and Aedes albopictus, both of which also transmit dengue virus. There is no direct person-to-person transmission. The virus has been isolated from monkeys in Africa.

3.3 Nature of the disease

Chikungunya is an acute febrile illness with sudden onset of fever and joint pains, particularly affecting the hands, wrists, ankles and feet [24]. There may be severe chills, leukopenia and often a rash. Generalized myalgia is also common. Most patients recover after a few days but in some cases the joint pains may persist for weeks, months or even longer. Chikungunya may also be asymptomatic.

3.4 Geographical distribution

Chikungunya occurs in sub-Saharan Africa, South-East Asia and tropical areas of the Indian subcontinent, as well as islands in the southwestern Indian Ocean [25, 26]. The period 2005-2007 witnessed an unprecedented spread of outbreaks that affected at least 12 countries and territories (Figure 1), including a localized outbreak in north-eastern Italy.

3.5 Risk for travellers

There is a risk for travellers in areas where chikungunya is endemic and in areas affected by epidemics.

3.6 Prophylaxis

None.

3.7 Precautions

The travellers should take precautions to avoid mosquito bites both during the day and night.

4. AVIAN INFLUENZA

4.1 Cause

Since 2003, the global panzootic of highly pathogenic avian influenza A (H5N1) among domestic poultry and wild birds has resulted in rare, sporadic, human H5N1 cases of severe respiratory disease with high mortality in Asia, Europe, the Middle East, and Africa [27]. Family clusters of H5N1 cases have been documented, and though most transmission of H5N1 viruses to humans is believed to be directly from sick or dead birds, limited human-to-human transmission of H5N1 viruses has been reported. As H5N1 viruses continue to evolve, the concern for a global influenza pandemic rises. Avian influenza A (H5N1) virus, and sometimes other non-human influenza subtypes (H7, H9).
4.2 Transmission

Human infections with avian influenza A(H5N1) virus occur through bird-to-human, possibly environment-to-human, and very rarely limited, non-sustained human-to-human transmission [28]. Direct contact with infected poultry, or surfaces and objects contaminated by their droppings, is the main route of spread to humans. Exposure risk is considered highest during slaughter, de-feathering, butchering, and preparation of poultry for cooking. There is no evidence that properly cooked poultry or poultry products can be a source of infection.

4.3 Nature of the disease

Patients usually present initially with symptoms of fever and influenza-like illness (malaise, myalgia, cough, sore throat). Diarrhoea and other gastrointestinal symptoms may occur. The disease progresses within days and almost all patients develop clinically apparent pneumonia with radiographic infiltrates of varying patterns. Sputum production is variable and sometimes bloody. Multiorgan failure, sepsis-like syndromes, and uncommonly encephalopathy, occur. The fatality rate among hospitalized patients with confirmed H5N1 infection has been high (about 60%), most commonly as a result of respiratory failure caused by progressive pneumonia and acute respiratory distress syndrome [29, 30].

4.4 Geographical distribution

Extensive outbreaks in poultry have occurred in parts of Asia, the Middle East, Europe and Africa since 2003, but only sporadic human infections have occurred to date. Continued exposure of humans to avian H5N1 viruses increases the likelihood that the virus will acquire the necessary characteristics for efficient and sustained human-to-human transmission through either gradual genetic mutation or reassortment with a human influenza A virus [29, 30, 31]. Between November 2003 and October 2007, >300 human cases of laboratory-confirmed H5N1 infection were reported to WHO from 12 countries in South-East and central Asia, Europe, Africa and the Middle East [31].

4.5 Risk for travellers

H5N1 avian influenza is primarily a disease in birds. The virus does not easily cross the species barrier to infect humans. To date, no traveller has been infected. The risk of infection is increased by prolonged, close and heavy exposure to the virus.

4.6 Prophylaxis

No human H5 vaccine is commercially available at present [32]. Neuraminidase inhibitors (oseltamivir, zanamivir) are inhibitory for the virus and demonstrate proven efficacy in vitro and in animal studies for prophylaxis and treatment of H5N1 infection. They are therefore recommended for post-exposure prophylaxis in certain exposed persons: (http://www.who.int/csr/disease/avian_influenza/guidelines/pharmamanagement/en/index.html). At present WHO does not recommend pre-exposure prophylaxis for travellers but advice may change depending on new findings.

4.7 Precautions

Travellers should avoid contact with high-risk environments in affected countries such as live animal markets and poultry farms, any free-ranging or caged poultry, or surfaces that might be contaminated by poultry droppings. Travellers in affected countries should avoid contact with dead migratory birds or wild birds showing signs of disease. Travellers should avoid consumption of undercooked eggs, poultry or poultry products. Hand hygiene with frequent washing or use of alcohol rubs is recommended. If exposure to persons with suspected H5N1 illness or severe, unexplained respiratory illness occurs, travellers should urgently consult health professionals. Travellers should contact their local health providers or national health authorities for supplementary information [33]. Infection control for suspected and confirmed H5N1 patients includes three key steps: isolation
of the patient, use of appropriate personal protective equipment (PPE) for health care workers and visiting family members, and adherence to infection control precautions. Suspected and confirmed H5N1 patients should be isolated in a single room with a controlled entryway. Health care workers and family members should be equipped with disposable gowns, gloves, goggles, and surgical masks or, if available, fit-tested respirators (e.g., N95). Use of respirators is especially important when performing tracheal suctioning or aerosol-generating procedures such as intubation and administration of aerosolized bronchodilator medications. Standard, contact, droplet, and air-borne precautions should be observed as much as possible. Negative-pressure rooms can be used if available but are not required. Proper donning and removal of contaminated PPE, safe disposal of contaminated PPE, and hand washing are essential.

Discussion

Emergency physicians play an important role in the recognition and control of emerging infectious diseases [34]. As in other aspects of the practice, pattern recognition is the cornerstone of diagnosis. Emergency physicians must be familiar with the clinical presentation of currently emerging infectious diseases in their region as well as nationally and internationally. To be able to promptly activate the public health system one must recognize new, different, and unusual patterns of disease presentation in the emergency department. Key components of the history that must be obtained include travel and potential occupational, dietary, or recreational exposures. The emergency physician must direct appropriate patient isolation and take precautions to protect oneself, the staff, and all other persons in the treatment area.

Emerging infections are, by definition, rapidly changing. The usual sources of medical information, peer-reviewed articles and medical textbooks, generally will not provide adequate information. The practicing emergency physician must be aware of local and national news and should frequently obtain up-to-date information through the Web site of the Center for Disease Control and Prevention (www.cdc.gov) or World Health Organization (www.who.com).

The combination of changing ecology and travel and transport of organisms is best seen clearly in antibacterial resistance. Sometimes, the distance travelled is only from one bed to another in the intensive care unit, but in other cases the movement has been worldwide [34]. All people planning travel should know about the potential hazards of the countries they are travelling to and learn how to minimize their risk of acquiring these diseases. Forward planning, appropriate preventive measures and careful precautions can substantially reduce the risks of adverse health consequences. Although the medical profession and the travel industry can provide a great deal of help and advice, it is the traveller's responsibility to ask for information, to understand the risks involved, and to take the necessary precautions for the journey.

Conclusions

Health professionals and the general public now understand that, with respect to infectious diseases, we live in a global community in which the health of developed and developing nations is intertwined. In this global community, infectious diseases can spread rapidly around the world, making global surveillance and control of emerging infections vital to world health [35,36,37,38]. These organisms may migrate from one part of the world to another on wind currents, among migratory fowl, or among travellers. Exotic infectious diseases on distant continents, once seen as posing little threat to the developed world, are now viewed with growing concern among scientists worldwide. Ecological changes and changes wrought by peoples of the world have contributed to the emergence of infectious diseases. These "advances of mankind" include movement of humans and domestic animals into new habitats, deforestation, irrigation, urbanization, and increased air travel. Moreover, public policy and politics—for example, decisions in?uencing poverty, economic development, population movements, refugees and migrants, and cooperation among governments that can exert enormous influence on the detection, surveil-
The emergence, treatment, and prevention of emerging infectious diseases also shape patterns of emerging and reemerging infectious diseases. Individual and group behaviors heavily influence the transmission of infectious diseases. In addition, the global decline of public health systems serves to render the world more susceptible to infectious diseases of all kinds [37, 38]. Important health organizations with a national or worldview of disease (e.g., the Centers for Disease Control and Prevention and the World Health Organization) have restructured themselves to place greater emphasis on infectious diseases and rapid responses to epidemics, wherever they emerge. Developed nations, recognizing the threat to their economic welfare and social stability, have poured increasing resources into prevention, detection, surveillance, and treatment of emerging infectious diseases and pledged to fight infectious diseases around the world in various cooperative efforts. Funds to support research aimed at understanding and controlling emerging infectious diseases have increased significantly over the past decade as governments have recognized the importance of this threat [35, 36, 37, 38]. This article hopes to provide readers the knowledge to better understand the emergence and re-emergence of infectious diseases. The future is upon us, and how we prevent and respond to outbreaks of emerging infectious diseases will influence our social-economic, and political status as well as our security for the coming decades. The global village is a reality indeed. When an event affects the population in one part of our world, it inevitably will have an impact on all others. "Virtually any destination can be reached from any other in only 36 hours of travel. This 36-hour window is well within the incubation period of most infectious diseases, thus providing ample opportunity for disease transmission to travellers and by them." [36].

References

Case Report

Acute massive pulmonary embolism responded well to thrombolytic therapy after 5 days of initiation.

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Abstract: Acute massive pulmonary embolism has a poor prognosis with a high rate of mortality. The management of acute pulmonary embolism in the intermediate term is not certain. Here, a 42-year-old woman with dyspnea and massive pulmonary embolism who was admitted to the hospital at the 5th day of the index event is presented. The clinical course improved immediately following infusion of thrombolytic therapy.

Key Words: pulmonary, embolism, thrombolytic

Pulmonary embolism (PE) is generally categorized as either "massive" or "non-massive, stable" pulmonary embolism. Patients with massive acute pulmonary embolism have a poor prognosis due to hemodynamic instability. We, herein, report a 42-year-old woman admitted with mild dyspnea and massive pulmonary embolism.

Case report

A 42-year-old woman presented with dyspnea and chest pain. She was admitted to another hospital with sharp chest pain and dyspnea 5 days ago. The patient's complaints were worsened. When asked, she complained of swelling and mild pain of her left leg for the last week. She had no other health problem and previous cardiac history. She was smoker of 1 pack of cigarette daily for 10 years and she has used oral contraceptive pill for 6 years. She was appearing to be in a mild dyspnea. Her respiratory rate was 22 breaths/min. She was afebrile. Homans sign was positive in the left leg. Her pulse pressure and pulse rate were 90/60 mmHg and 114 bpm, respectively. Arterial blood examination revealed mild hypoxia and hypocapnia with an oxygen saturation of 94% in the room air.

An initial 12-lead electrocardiogram (ECG) showed sinus tachycardia and S1-Q3-T3 pattern. Successive ECG follow-up showed negative T wave on the V1-3 derivations in addition to ST depression of nearly 1 mm in anterolateral precordial leads (Figure 1A, 1B). Chest X-ray revealed normal findings. Echocardiography showed normal global ejection fraction of 65% and mild right ventricular dilatation with tricuspid regurgitation and pulmonary hypertension. Pulmonary arterial systolic pressure was 45 mmHg. We performed computerized tomography which revealed bilateral massive pulmonary thromboembolism (Figure 2). Although the patient's complaints began 5 days ago, we immediately started tissue plasminogen activator (tPA) of 100mg in 2 hours in addition to heparin infusion. After the infusion therapy, the patient's complaints as well as ECG finding normalized promptly (Figure 1C). Follow-up period was uneventful. Echocardiographic examination shortly after the lytic therapy, showed improved right ventricular function and diameter in addition to pulmonary artery pressure. She was dis-
charged with warfarin therapy. During the subsequent 1-month follow-up, the patient remained asymptomatic. Echocardiographic follow-up was also in normal limits.

Figure 1. (A) ECG at presentation but at the 5th day of index event shows the sinus tachycardia and S1-Q3-T3 pattern. (B) Successive ECG follow-up shows negative T wave in addition to ST depression on the precordial leads. (C) After the tPA infusion, tachycardia was resolved.

Figure 2. CT at the presentation time shows bilateral massive pulmonary embolism (A). After the thrombolytic (tPA) infusion, branches of the pulmonary vasculature are seen clearly (B).

Discussion

Although most of the patients have a risk factor such as immobilisation, morbid obesity, malignancy, previous thromboembolic disease, heart failure, pregnancy, smoking, recent surgery or oral contraceptive pill usage, PE is underdiagnosed by the physicians (1). Patients with PE generally have nonspecific findings including dyspnea, tachycardia, chest pain, cyanosis, and syncope (1). Systemic hypotension, severe dyspnea, respiratory failure, and cardiogenic shock define massive pulmonary embolism. Massive PE has a poor prognosis and after the diagnosis, the critical duration begins because of increased risk for early mortality and disease recurrence (2). In our case, the patient had risk factors including smoking, oral contraceptive pill usage, and left leg swelling and pain, although PE was undiagnosed at the first presentation.

Anticoagulation with heparin prevents clot propagation and helps clot dissolution over weeks and months. The main question is that when should we use thrombolytic agents? A meta-analysis by Thabut et al. (3) reported that the use of thrombolytic to treat PE was not associated with mortality reduction or disease recurrence. Agnelli et al. (4) concluded that thrombolytic therapy was not associated with mortality reduction compared to heparin. In these trials, thrombolytic therapy was used < 5 days beginning of the symptoms, especially at the first 24 hours (1,2). Use of...
thrombolytic therapy is unclear for massive, stable, and late diagnosed pulmonary embolism. We treated our patient with tPA and heparin infusion together. Symptoms of patient as well as the tachycardia and the strain of the right ventricle relieved immediately.

Assessing the risk is the most critical step to determine the treatment strategy in the patients with PE. On the other hand this case suggests that thrombolytic therapy even in the intermediate period should be considered in massive PE even if the presentation is late.

References

Case Report

Sigmoid volvulus in a 20 year old young adolescent with no history of operation: A case report

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Abstract: Sigmoid volvulus frequently presents in elderly at the seventh and eighth decades and may occur due to chronic constipation. Volvulus is not rare in young adolescents, and when the diagnosis occurs may be delayed. We report a young adolescent with volvulus of the sigmoid colon without any previous abdominal operation. The etiology was dense adhesions throughout the whole abdominal cavity running along the sigmoid mesentery. The patient was treated with sigmoid resection and primary anastomosis.

Key Words: Sigmoid volvulus, mechanical intestinal obstruction, young adolescent.

Sigmoid volvulus is a closed loop obstruction usually due to a twist around a short mesenteric root. The condition is frequent in seventh and eighth decades [1] and usually associated with chronic constipation. The early diagnosis is vital in all cases because misdiagnosis may lead to disastrous complications such as bowel ischemia, strangulation, gangrene and perforation. There are 93 cases reported in children and young adolescents [2] with overall mortality of 7.5 % [3,4]. Although physicians are familiar with this clinical situation in elderly patients, the acute peritoneal symptoms accompanied by severe distention of the abdomen and constipation in young patients are also prominent. Volvulus of the sigmoid colon typically presents with severe abdominal pain with acute onset accompanied with ongoing constipation, distention, and nausea and vomiting. Radiologic studies and blood count are used in diagnosis. White blood cell count may not be increased in all patients but in plain abdominal films several signs from mild to severe may be seen. The radiologic findings vary from non specific air-fluid levels, enlarged colonic gas images due to colonic dilatation to "coffee-bean" sign [5] which is characteristic for sigmoid volvulus.

Case Report

A 20 year old male patient presented to our clinic with mild abdominal pain, constipation without nausea, vomiting and severe abdominal distension. The patient had no abdominal operation before and he denied previous bout of constipation. The complaints had started two days earlier and the patient's oral intake was normal. The physical examination was normal except severe abdominal distension and hypoactive bowel sounds. Digital rectal examination was normal and no stool or blood was encountered in the ampulla. Laboratory parameters were totally in normal ranges. An upright plain abdominal film revealed the distended sigmoid colon with "coffee-bean" sign (Figure 1). Rigid rectosigmoidoscopy failed to decompress the distended sigmoid loop, thus we proceeded with laparotomy. Laparotomy revealed a distended sigmoid loop...
over 20 cm at the largest segment with a dense adhesion on the root of the mesentery (Figure 2). Abdominal exploration revealed accompanying dense adhesions all around the abdominal cavity, especially around the ceacum. Sigmoid resection and primary anastomosis was performed because no signs of bowel ischemia were seen. No further action was taken for adhesions in other parts of abdominal cavity.

Figure 1: Up-right abdominal radiogram shows distended sigmoid colon with "coffee-bean" sign.

Figure 2: Operating view of excessive distended of sigmoid loop.

Discussion

Sigmoid volvulus may be a disastrous problem both in the elderly and the younger patients when misdiagnosed because of the risk of bowel ischemia leading to strangulation, perforation and peritonitis. Although the diagnosis is easily considered in elderly, and an underlying process like chronic constipation, previous diverticulitis attacks and adhesions due to previous operations are usually present; the children and young adolescents are disadvantaged under these circumstances because it may easily be misdiagnosed. According to the stage of the process, the symptoms and findings may vary in a wide spectrum; plain abdominal films may relieve air-fluid levels which are not specific to volvulus but may be seen in a large variety of disorders which cause colonic obstruction. Patients may not have any pathologic laboratory findings. Even during an ongoing obstructive process patients may have stool in rectum [6] and normal oral intake, as in our case, may prevent the surgeon from early diagnosis.

The "coffee-bean" sign which is formed by the upper limb of the gas-filled sigmoid loop as a large inverted 'U' with a fluid level in each limb in plain abdominal radiographs and "bird's beak" sign in water-soluble contrast enema study [7] are diagnostic for sigmoid volvulus and no further radiologic investigation is necessary. Use of CT in the diagnosis of sigmoid volvulus is controversial. In a great variety of cases the clinical presentation is typical and plain upright abdominal radiograms reveal clearly the pathognomic signs. Therefore when the young adolescents and children are considered CT is crucial in the algorithm. In our case, plain upright abdominal radiogram revealed the coffee-bean sign and the diagnosis was clear. No further investigation was needed to decide the therapy. But in elderly patients an underlying colonic tumor can mimic the pattern of volvulus in plain abdominal radiogram; therefore a CT scan may be included in order to eliminate such possibility. Besides eliminating the malignancy, CT scan can reveal the adhesions at the mesentery of the sigmoid colon known as the "whirl" sign, but it is not as pathognomic as the coffee-bean sign or bird's beak sign[8].
After the diagnosis is clear and any malignancy is eliminated first step in the algorithm should be endoscopic decompression. We also tried endoscopic decompression in the operation room with a rigid proctoscope which was unsuccessful. The effectiveness of endoscopic decompression is 81% [4] but it also has a recurrence rate between 43% and 57% [4,9], and the patients usually have to have a laparatomy in order to resect the long sigmoid loop. Endoscopic decompression should be thought as a palliative initial step of the algorithm in order to prevent the patient from an emergency laparatomy and increase the primary anastomosis chance at the same time. Considering that a long sigmoid loop is the prior reason underlying the problem, the resection of this segment is the exact therapy. After the failure of the endoscopic decompression the patient is prepared for a laparatomy immediately in the operation room. The aim is to resect the long sigmoidal loop and primary anastomosis should be done if no sign of bowel ischemia is seen. We performed stapled primary anastomosis after sigmoidal resection. If the assessment of the bowel wall reveals that a primary anastomosis will not be safe, a temporary colostomy or diverting loop ileostomy should be done.

Sigmoid volvulus is a frequent clinical situation and the diagnosis may easily be cleared with basic physical examination and simple radiographic studies. These would be either a plain upright radiograph or a water-soluble contrast enema study; the latter being both diagnostic and therapeutic. CT should be considered in elderly cases in order to eliminate the possibility of the underlying colon malignancy. The first step of the algorithm is endoscopic decompression and one should remember that the technique itself is a palliation to prevent the emergency laparatomy and enhance a primary anastomosis. Considering that the underlying cause is a long sigmoid loop the surgical therapy should involve sigmoid resection.

References