CASE-CONTROL STUDY: POSTTRAUMATIC STRESS DISORDER, HABITS AND FREQUENCY OF SYMPTOMS OF WAR VETERANS DURING WAR

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PTSD and habits of war veterans

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Summary:

Aim: To analyse habits (abuse tobacco, alcohol, psychoactive substances and drugs) of war veterans and difference in frequency of symptoms in persons with PTSD and those without it.

Methods: We have done prospective research (case-control study) in a period from September of 2005 to June 2006. The sample consisted of two groups of examinees: test group – 60 males with PTSD and control group – 60 males without PTSD. The control group was formed using matching criteria (same age, level of education). Both groups included married males. Research was performed using questionnaire made for this study.

Results: Higher number examinees from control group were employed comparing to test group ($\chi^2=45.753; \text{df}=4; p<0.050$). The same number of examinees in both groups participated in war activities ($\chi^2=0.063; \text{df}=1; p=0.802$). Higher number of examinees in test group used psychoactive substances during war period (18.3% vs. 3.3%). We have found out that 85% of examinees with PTSD have been using some anxiolitic drugs in the period of research, comparing to only 5% of those without PTSD ($\chi^2=77.576; \text{df}=1; P<0.050$). All examinees with PTSD had some kind of sleeping disorders comparing to 70% of those without PTSD. Results showed that there is no statistically significant difference between patients with PTSD and control groups regarding tobacco abuse ($\chi^2=1.776; \text{df}=1; P=0.183$), while analysis of alcohol abuse showed statistically significant difference between examined groups ($\chi^2=9.654; \text{df}=2; P=0.008$).

Conclusion: Higher number of examinees in test group used psychoactive substances during war period, anxiolitic drugs and had alcohol abuse in comparison to examinees in control group. There was no difference between two groups examinees regarding tobacco abuse.

Key words: PTSD, war veterans, habits, tobacco, alcohol, psychoactive substances, drugs.
Introduction

Patients with PTSD are often being not recognized or mistreated. This disorder has significant influence on life quality, working ability (van Zlst 2003) and interpersonal relations. Epidemiological and clinical studies showed that PTSD caused by war is more often associated with other psychiatric disorders (van Zlst 2003). Level of co-morbidity is especially high in PTSD that developed like consequence of war trauma. The most frequent associated psychiatric disorders are: major depression, generalized anxiety disorder, panic disorder, phobia, alcohol and drugs abuse and personality disorder (van Zlst 2003, Bleich 1997, Uzun 1998).

Few recent studies confirmed that persons with PTSD three times more often reported about anxiety, depression, psychosis and unsocial behaviour of family members contrary to persons which were also exposed to trauma but did not have PTSD (Davidson 1998, Yehuda 2001, Yehuda 1998).


Beside this, persons with PTSD are often participating in behaviours accompanied with negative factors like substance abuse and addiction (Rodriguez 2003, Felitti et al 1998, Schnurr et al 2000).

Early analyses following the September 11 terrorist attacks on New York City showed an increase in cigarette, alcohol, and marijuana use (Vlahov 2004). Alcohol dependence and depression disorder were co morbid with PTSD in men. Early onsets of marijuana and heroin use, alcohol dependence and opiate dependence were each associated with exposure to a traumatic event for males. In the 16% of the sample who reported trauma exposure and poly-substance use, the trauma occurred after the onset of all substance use, with the exception of crack cocaine use (Johnson 2006).

The prospective and retrospective data show an increased risk for the onset of nicotine dependence and drug abuse or dependence in persons with PTSD, but no increased risk or a significantly (P =0,004) lower risk (for nicotine dependence, in the prospective data) in persons exposed to trauma in the absence of PTSD, compared with unexposed persons. Exposure to trauma in either the presence or the absence of PTSD did not predict alcohol abuse or dependence. The findings do not support the hypothesis that exposure to traumatic events per se increases the risk for substance use disorders. A modestly elevated risk for nicotine dependence might be an exception. Posttraumatic stress disorder might be a causal risk factor for nicotine and drug use disorders or,
alternatively, the co-occurrence of PTSD and these disorders might be influenced by shared risk factors other than traumatic exposure (Breslau 2003).

High rates of posttraumatic stress disorder and borderline personality disorder (BPD) have been reported among dependent heroin users (Ross 2005). Subjective reports of sleep disturbance indicate that 70-91% of patients with PTSD have difficulty falling or staying asleep. Nightmares are reported by 19-71% of patients, depending on the severity of their PTSD and their exposure to physical aggression (Maher 2006).

Subjects and methods

Subjects
We have included into our study 60 examinees with PTSD diagnosed by psychiatrist. The control group was formed using matching criteria (same age, level of education). All examinees were questioned during period from September of 2005 to June of 2006 at Health Care Center Mostar by author of study. Survey was voluntary.

Methods
We have questioned patients who came at Health Care Centre Mostar during period from September of 2005 to June of 2006 on their own or were sent by their psychiatrists. Study was done using questionnaire specially designed for this study, covering general information about subject, his answer on habits during war, after war and particular psychological problems (appendix 1). In the beginning we have done pilot study on 15 patients to determine if the questionnaire was understandable. As no inconvenience was found, we continued with our questionnaire in other subjects.

Statistical analysis
Difference between groups was tested using chi-square test. Level of significance was p<0.05. Analysis was done using Statistical Package for Social Science for Windows v.12.0 (SPSS Inc., Chicago, IL, USA).

Results
Sixty male examinees with PTSD were questioned and same number of those without PTSD. Majority of examinees were age between 35 and 55 years (53.3%) and majority of
them were high school educated (61.7%) (same in both groups). Statistically significant difference existed in number of employed persons in control group (68.3%) comparing to test group (16.7%; $\chi^2=45.753$; df=4; p<.001) (Table 1). No statisticaly significant difference was found between two group connected to active participation in war activities (83.3% vs. 85.0%; $\chi^2=0.063$; df=1; p=0.802).

There was no staticticaly significant difference related to tobacco abuse in the period of research ($\chi^2=1.776$; df=1; p=0.183), but it was found related to alcohol abuse in the same period ($\chi^2=9.654$; df=2; p=0.008) (Table 1). High number of examinees in test group used opioid drugs during war (18.3% vs. 3.3%; $\chi^2=7.878$; df=3; p=0.019). In test group 85% of examinees used anxiolitic drugs in the period of research, comparing to control group where only 5% of examinees used such drugs ($\chi^2=77.576$; df=1; p<0.001).

In the analysis of troubles with sleeping, we found that all examinees in tested group had some kind of troubles with sleeping comparing to 30% of examinees in control group who didn't have any of these, which is statisticaly significant difference ($\chi^2=50.595$; df=3; P<0.050). There was an interesting result regarding frequency of flashbacks of war images. We have found that 71.7% of examinees in control group had sometimes flashbacks of war images, comparing to 50% of examinees in tested group ($\chi^2=49.315$; df=3; P<0.050).

**Discussion**

War veterans with chronic PTSD are often presented like complicated clinical pictures which can demand investigation of co-morbid states, associated psychological disturbances and weakening of functions in many psychosocial domains (Gallager 1998).

In test group only 16.7% of males said that they are active workers comparing to 68.3% of examinees in control group. There was one study done in Australia on 197 of subjects divided into four groups (Vietnam veterans, civilians, fathers and children). This study showed that big number of war veterans were retired or were not employed (35%) and war veterans and their children were also more often unemployed comparing to their civil copies (Davidson and Mellor 2001).

High number of examinees from test group used opioid drugs during war (18.3%) comparing to examinees in control group (3.3%). Studies done in general population found that substance abuse and cocain abuse would increase possibility of developing PTSD three times on criterions of DSM-III than in persons who did not have such substance abuse (Clark 2001). They have found that from 150 of their examinees who were using opioid substances 29% of them have had positive criterions for PTSD on DSM-III classification. Onset of PTSD symptoms is strongly connected to severness of opiates abuse. This connections points to the fact that psychological disturbance accompanied with exposure to trauma can be risk factor for further severness of opiates abuse (Clark 2001). Ross (Ross and al 2005). described characteristics of persons addicted on psychoactive drugs. In their sample there were high degrees of related health problems (74%) and a history of heroin overdose (58%) were commonly reported.
In test group 28 (46.7%) of examinees had inability to fall asleep, comparing to control group where no such problems had been reported ($\chi^2=50.595; \text{df}=3; \text{P}<0.050$). Although 30% of patients from control group did not have any sleeping problems, high number of those with some kind of sleeping problems inside this group (70%) but without development of PTSD, could be explained by the fact that same number of examinees in both groups had active participation in war. Big studies with patients who had some traumatic experience show that 70-87% of patients with PTSD had sleeping disorders. These results showed 48-60% increase in number of sleeping disorders comparing to subjects without PTSD (Maher 2006).

Two big studies with Vietnam veterans with PTSD report rate of 91% of sleeping disorders. One of these two studies (N=1 552) found that inability to fall asleep was found in 44% of war veterans with PTSD, 5.5% of war veterans without PTSD and 5% of civilians without illness. Inability to remain asleep is found in 91% of war veterans with PTSD, 63% of veterans without PTSD and 53% of civilians without illness. Nighmares were showed in 19-71% of patients. This big difference could be explained by the severness of PTSD symptoms, exposure to war fightings and other sort of aggression and associated psychiatric disorders (Maher 2006). Sleeping disorders in patients with PTSD had high prevalence and evidences pointed to their connection with the onset, duration and worsening of PTSD symptoms (Maher 2006, Germain 2003, Kramer 2003, Krakov 2002).

Traumatic nightmares and sleeping disorders are among the most painful symptoms of PTSD and among the most resistant to treatment (Neylan 1998, Raskind 2006). Nightmares can be connected to alcohol and drugs abuse, suicidal ideas and can bring to suicide (Raskind 2006). Fifty percent of examinees in test group relived pictures of war horror experiences every day and 50% of them did it periodically. In control group, 43 (71.7%) of subjects relived periodically pictures of war horror experiences and 17 (28.3%) of subjects did it very rare or did not at all. Although the examinees in control group didn't develop PTSD, high number of those had flashbacks of war images. This result can be explained with the fact that all examinees in both groups had been under the same exposure to war activities.

Eighty five percent of examinees in test group took anxiolitic drugs comparing to control group in which only 5% of subjects used such drugs. Substance abuse was increased during crisis (war, emigrations, catastrophes, fear for existence etc). Benzodiazepins (BDZ) are most misused psychopharmaceuticals because of their easy availability (Calhoun 2000). Benzodiazepins are not the best treatment of PTSD (Davidson 2004) although they can lower anxiety and improve sleeping in patients with PTSD (Vieweg 2006). However, they can not control or eliminate three major groups of symptoms (reliving, avoidance/rigidity, hyperactivity) (Vieweg 2006). Results of meta analysis done by Barker and al. pointed to the fact that prolonged use of benzodiazepins can bring to the cognitive impairment (Stevens and Pollack 2005; Barker 2004).

Data from one study proved that interruption in prolonged treatment with benzodiazepins could cause severe recurence of symptoms in patients with PTSD (Davidson 2004). Unfortunatelly, in the majority of Bosnia and Herzegovina, benzodiazepins are used without any control, they can be bought in free market of drugs,
which can complicate further hard situation. In one study thirteen subjects were treated with benzodiazepins while their “copies” in control group were not treated with BDZ (Davidson 2004). After 6 months of use, 9 examinees (69%) from group treated with benzodiazepins and 2 (15%) from control group developed symptoms of PTSD. This result led to the conclusion that treatment with benzodiazepins immediately after trauma did not decrease development of PTSD and persons not treated with benzodiazepins had lower incidence of PTSD after 6 month (Davidson 2004).

We got the interesting result comparing data about use of some anxiolitic drug and sleeping problems in test group: 86.7% of those examinees used some anxiolitic drugs and 43.3% had sleeping disorder and inability to fall asleep ($\chi^2=7.076$; df=3; p=0.029), what confirm results of previously done studies. This result could lead us to the idea that prolonged and uncontrolled use of benzodiazepins can maintain symptoms of PTSD causing reeboand insomnia.

Limitation of our study is relatively small sample. We have done analysis ten years after war and approximately the same after onset of illness, what means that all examinees were already in chronic phase so all symptoms can be less expressed. We did not ask about tobacco and alcohol abuse before war, so we did not know exactly if war and development of illness had increased alcohol abuse. Question of social drinking was not exactly defined. Also, we did not ask about sort of used axioliotic drugs neither if it was prescribed by physicians and were they still going to control exams to their physicians. We did not define cause of high number of subjects in control group with sleeping problems what we also recognized as limitation. In the following studies these parametres should also be included.

Conclusion:

Most examinees in both groups were age between 35-55 years and had level of education of secondary school. Statistically significant difference was found in number of employed persons in control group comparing to test group. Higher number of examinees in test group used psychoactive substances during war period, anxiolitic drugs and had alcohol abuse in comparison to examinees in control group. Ther was no difference between two groups examinees regarding tobacco abuse Analysing difference in frequency of symptoms of PTSD we have found out that there is significantly lower number of examinees that had some troubles with sleeping in control group comparing to tested group with PTSD and significantly higher number of examinees that sometimes had flashbacks of war images in control group comparing to tested group.
Table 1 State of employment, habits and other symptoms examenees with and without PTSD

<table>
<thead>
<tr>
<th></th>
<th>Number (%) in group with father</th>
<th>PTSD</th>
<th>no PTSD</th>
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<tbody>
<tr>
<td><strong>Are you employed?</strong></td>
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<tr>
<td>Employed</td>
<td>10 (16.7)</td>
<td>41 (68.3)</td>
<td></td>
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<tr>
<td>War invalid on custody</td>
<td>35 (58.3)</td>
<td>5 (8.3)</td>
<td></td>
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<tr>
<td>War invalid without income</td>
<td>4 (6.7)</td>
<td>0</td>
<td></td>
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<tr>
<td>Unemployed</td>
<td>5 (8.3)</td>
<td>7 (11.7)</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>6 (10)</td>
<td>7 (11.7)</td>
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<tr>
<td>$\chi^2=45.753$; df=4; P&lt;0.050</td>
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<tr>
<td><strong>Smokers</strong></td>
<td></td>
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<tr>
<td>Yes</td>
<td>42 (70)</td>
<td>35 (58.3)</td>
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<tr>
<td>No</td>
<td>18 (30)</td>
<td>25 (41.7)</td>
<td></td>
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<tr>
<td>$\chi^2=1.776$; df=1; P=0.183</td>
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<tr>
<td><strong>Alcohol</strong></td>
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<tr>
<td>Yes</td>
<td>27 (45)</td>
<td>20 (33.3)</td>
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<tr>
<td>No</td>
<td>14 (23.3)</td>
<td>30 (50)</td>
<td></td>
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<tr>
<td>Social drinking</td>
<td>19 (31.7)</td>
<td>10 (16.7)</td>
<td></td>
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<tr>
<td>$\chi^2=9.654$; df=2; P=0.008</td>
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<tr>
<td><strong>Have you ever used any psychoactive substance?</strong></td>
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<td></td>
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<tr>
<td>No</td>
<td>43 (71.7)</td>
<td>54 (90)</td>
<td></td>
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<tr>
<td>Yes, only tried</td>
<td>6 (10)</td>
<td>4 (6.7)</td>
<td></td>
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<tr>
<td>Yes, during war period</td>
<td>11 (18.3)</td>
<td>2 (3.3)</td>
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<tr>
<td>Yes, I use them even now</td>
<td>0</td>
<td>0</td>
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<tr>
<td>$\chi^2=7.878$; df=2; P=0.019</td>
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<tr>
<td><strong>Do you have sleeping problems?</strong></td>
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<tr>
<td>Inability to fall asleep</td>
<td>28 (46.7)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Easy fall asleep but inability to remain asleep</td>
<td>10 (16.7)</td>
<td>22 (36.7)</td>
<td></td>
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<tr>
<td>Periodically having nightmares</td>
<td>22 (36.6)</td>
<td>20 (33.3)</td>
<td></td>
</tr>
<tr>
<td>No problem, good sleep</td>
<td>0</td>
<td>18 (30.0)</td>
<td></td>
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<tr>
<td>$\chi^2=50.595$; df=3; P&lt;0.050</td>
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<tr>
<td><strong>Do you relive war horror experiences?</strong></td>
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<tr>
<td>Yes, every day</td>
<td>30 (50)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Yes, periodically</td>
<td>30 (50)</td>
<td>43 (71.7)</td>
<td></td>
</tr>
<tr>
<td>Very rarely</td>
<td>0</td>
<td>11 (18.3)</td>
<td></td>
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<tr>
<td>No</td>
<td>0</td>
<td>6 (10)</td>
<td></td>
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<tr>
<td>$\chi^2=49.315$; df=3; P=0.050</td>
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<tr>
<td><strong>Do you use anxiolitic drugs?</strong></td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51 (85)</td>
<td>3 (5)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9 (15)</td>
<td>57 (95)</td>
<td></td>
</tr>
<tr>
<td>$\chi^2=77.576$; df=1; P&lt;0.050</td>
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Reference:


APPENDIX 1:
Please answer truly and in accordance with your experience on a given questions. Circle the letter in front of the answer which is applied to you. In the questionnaire there are no correct or false answers.
After you answer all the questions, please return the questionnaire by mail on an address which is on the envelope, at the expense of the author.
We are thankful for your cooperation.

GENERAL FAMILY DATA:

1. How many children do you have? ______________

2. You are living with:
   a) a husband and ……………children (please state the number of children)

3. Did you live in Mostar even before the war?
   a) Yes
   b) No

4. Where do you live?
   a) flat
   b) with parents
   c) rented flat

5. Did you have a solved housing problem before the war?
   a) Yes
   b) We’ve lived with parents
   c) No

6. Number employed in family?
   a) None
   b) Only husband
   c) Husband and a wife
   d) All adults
   e) Wife and one of the children.

7. Please state total income in your family
   a) Without
   b) Less than 500 KM
   c) 500 – 1000 KM
   d) 1000 – 1500 KM
   e) Over 1500 KM
THE HEAD OF THE FAMILY – SUFFER FROM PTSD

1. How old are you?
   a) 25 - 35
   b) 35 - 55
   c) over 55

2. Please state the level of your education?
   a) Elementary
   b) secondary
   c) College

3. Please state your religion?
   a) Catholic
   b) Muslim
   c) Orthodox
   d) Others

4. Do you smoke?
   a) Yes
   b) No

5. Do you drink alcohol?
   a) Yes
   b) No
   c) Sometimes

6. Have you ever tried any kind of drugs?
   a. No
   b. Yes, I’ve just tasted
   c. Yes, during the war
   d. Still using it

7. Do you take some sort of benzodiazepines?
   e. Yes
   f. No

8. Were you an active participant in a war?
   a) Yes__________________ (How much time did you spend in the war?)
   b) No
9. From the given trauma experiences please circle all of them that you have been exposed to during the war
   a. Injured
   b. Captured
   c. Witness of many deadly injured people
   d. Surrounded for more than 24 hours
   e. Lost in a mine field
   f. Was exposed to a heavy artillery fire or a sniper shooting
   g. Banished and separated from family for a long period of time
   h. Without food or water for a long period of time

10. Do you have flashbacks of war images?
    a. Yes, everyday
    b. Yes, sometimes
    c. Rarely
    d. Never

11. Do you have trouble with sleeping?
    a. Yes, I fall asleep with difficulty?
    b. Yes, I fall asleep easy, but during the sleep I woke up a lot
    c. Sometimes, I have nightmares
    d. No problems during sleep

12. Do you have any problems with your wife?
    a. Yes, she’s making me nervous
    b. Sometimes there are problems just like any other marriage
    c. We don’t have any problems

13. Do you think your illness has any influence on your child?
    a. Yes
    b. No
    c. Don’t know

14. If the answer on a previous question is Yes, please tell in which way you have effect on your child (you can circle more than one answer)
    a. Preoccupied with my health problems
    b. Very often I feel run down
    c. It’s very hard to answer all the questions which they ask
    d. Sometimes they’re making me too nervous so I lose control
    e. Considering my condition I’m trying not to influence negatively on my kids
    f. I’m trying to positively influence my kids

15. What kind of influence does all this have on your child?
    a. He /she is afraid of me and rarely speaks with me
    b. When a problem appears he /she goes to his mother
    c. I don’t have any problem in communicating with my children