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Brief Report

Anniversary Reactions in Gulf War Veterans: A Naturalistic Inquiry 2 Years After the Gulf War

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The goal of this study was to assess the occurrence of anniversary reactions in Gulf War veterans 2 years after the conclusion of Operation Desert Storm. Subjects were administered questionnaires and asked to identify specific months of best and worst functioning, and months of least or most symptoms of posttraumatic stress disorder (PTSD). Negatively experienced months were compared to documented dates of exposure to traumatic events during the war. Anniversary reactions occurred with a frequency greater than chance and were seen most in individuals exposed to a greater number, and to more severe types, of traumatic events. This suggests that anniversary reactions are etiologically linked to traumatic events and may be a part of the syndrome of PTSD.

KEY WORDS: anniversary reaction; trauma; Gulf War.

The "anniversary reaction" has been described as a specifically timed, emotionally invested episode during which an individual experiences significant psychiatric or medical symptoms (Weiss, 1958). It is theorized that such an individual has been "sensitized" by exposure to a specific traumatic event and that the effects of this sensitization are experienced later under circumstances reminiscent of the event. Authors have differed in their opinion about which circumstances or triggers are more important in precipitating anniversary reactions. While some have placed emphasis on the age of the patient, others have focused on the date and nature of the stressful event (Beratis et al., 1994; Marsh & Peery, 1977; Miller, 1978; Minz, 1971;

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Musaph, 1990). Regardless of emphasis, there remains a consensus that the distress of the patient is meaningfully connected to a specific, previously experienced traumatic event.

A wide variety of illnesses including amenorrhea, chest pain, depression, mania, hypertension, anxiety, hysteria, psychosis, grief, filicidal impulses, asthma, and dermatitis have reportedly been precipitated on the anniversary of past traumatic events (Beratis et al., 1994; Cavenar et al. 1977; Green, 1982; Miller, 1978; Sanger, 1970; Weiss, 1958). In some cases there appear to be phenotypic similarities between the illness precipitated and elements of the earlier traumatic event—such as feelings of grief or chest pain on the anniversary of the death of a loved one who died of heart disease. On the other hand, there is often no such similarity, i.e., the development of essential hypertension on the anniversary of the childhood loss of a sibling.

To date, only one longitudinal study has empirically examined the timing of and the symptoms experienced during anniversary reactions to traumatic events. In a study of 92 conjugally bereaved widows and widowers on the first anniversary of their spouse's death, Bornstein and Clayton (1972) identified anniversary reactions in four subjects. Each of these subjects suffered from clinically significant depression and identified the anniversary date as the nidus of their psychological distress.

Despite the virtual absence of empirical data on anniversary reactions, it has become routine for many war-related posttraumatic stress disorder (PTSD) treatment programs to ask veterans about combat traumas and corresponding annual exacerbations of psychiatric symptomatology (American Lakes Program, Takoma Washington; PTSD program, VA Connecticut; PTSD Program, Menlo Park VAMC, Palo Alto, CA. [personal communications]). It is believed that by learning about and recognizing anniversary dates, veterans can better understand, and control, their psychological distress. Relapse prevention models of treatment instruct patients to anticipate "anniversaries" so that PTSD symptoms can be dealt with more effectively.

The present pilot study is part of a larger investigation that has focused on the evolution of trauma-related symptomatology in Gulf War veterans (Southwick et al., 1995). Using questionnaires based on DSM-III-R nosology, we have evaluated the relationship between traumas experienced during the Gulf War and the timing and nature of postwar psychiatric distress.

Method

Subjects

Subjects in the study were 62 (49 men, 13 women) of 119 soldiers recruited from two Connecticut Army Reserve Units (142nd Medical; 143rd

Military Police) during their first monthly training session after the Gulf War. The 62 subjects were those who continued to participate in our study at the 2-year time-point (Southwick et al., 1993; Southwick et al., 1995). Three subjects did not complete the questionnaire and were excluded from the data analysis. Thus the present data are from 59 subjects (29 from the Medical Unit; 31 from the Military Police Unit). All subjects gave written informed consent.

Measures

The Mississippi PTSD scale is a validated self-report inventory consisting of 35 items derived from DSM-III and associated features (Keane, Caddell, & Taylor, 1988). The Desert Storm Trauma Questionnaire is a nonvalidated scale composed of 19 items assessing stressors frequently experienced by Desert Storm personnel (Southwick et al., 1993; Southwick et al., 1995).

The BSI is a validated brief psychological self-report symptom scale developed from its longer parent instrument, the SCL-90-R (Derogatis, 1975; Derogatis & Melisaratos, 1983). It consists of 53 items designed to assess 9 primary symptom dimensions: Somatization, Obsessive-compulsive, Interpersonal sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation, and Psychoticism.

To assess emotional functioning within the past 12 months, subjects were asked to indicate during which month of the previous year they had felt the "BEST" and during which month they had felt the "WORST." Additionally, each subject was asked to indicate during which month, if any, he or she experienced the "MOST" stress-related symptoms, i.e., the 17 symptoms of DSM-III-R for PTSD. Subjects also rated the month during which they experienced the "LEAST" stress-related symptoms.

To assess trauma each individual was asked the question: "Please give the date and a description of your MOST traumatic event." This question was deliberately placed as far as possible from the questions about best and worst months of emotional functioning so as not to bias the subjects. The date of an individual's most traumatic event was the date used to determine the presence or absence of anniversary reactions.

In this study an anniversary reaction was defined as *either*: (1) a match between the month of the most severe war-related traumatic event and the month identified as "WORST" during the previous year; or (2) a match between the month of the most severe war-related traumatic event and the month during which PTSD specific symptoms were most prominent.

Data Analysis

Chi-squares were performed to determine whether anniversary reactions occurred at a frequency greater than that expected due to chance. Since we defined an anniversary reaction as either a match between date of most severe trauma and the month of feeling "Worst", or a match between the date of trauma and the month of greatest PTSD specific symptomatology, there was a 2 in 12 (17%) probability that an "anniversary reaction" would exist by chance alone.

Additional chi-squared tests were performed to determine whether these matches occurred at a greater frequency than that expected by chance in the Medical and Military Police Units separately.

Paired *t*-tests were performed to determine whether, and in what manner, individuals with anniversary reactions differed from other unit members without anniversary reactions on the following variables: Mississippi Score, Desert Storm Trauma Questionnaire, and the BSI.

Results

The Presence of Anniversary Reactions

In the total group ($N = 59$), the observed number of subjects indicating an anniversary reaction was 18. This was significantly greater than that expected by chance, $\chi^2(1, N = 59) = 51.3, p < .007$.

Of the 29 subjects within the Medical Unit, one would expect 4.8 anniversary reactions by chance alone. By contrast, 15 subjects selected a month corresponding to their identified date of traumatic exposure. This was significantly greater than that expected by chance, χ^2 $(1, N = 29) = 25.7, p < .02$. Similarly, in the Military Police Unit, one would expect 4.8 anniversary reactions. Only three subjects selected a month corresponding to their identified date of traumatic exposure. Thus, the occurrence of anniversary reactions was significantly greater than that expected by chance in the group of veterans as a whole, in the Medical Unit, but not in the Military Police Unit.

The Relationship Between Anniversary Reactions and the Type of Traumatic Events Experienced

Among the 18 subjects with anniversary reactions, 12 subjects linked them to witnessing the death of another human being, 4 to the experience

of being activated for the war, and 2 in response to undergoing SCUD missile attacks.

Differences Between the Anniversary Reaction and Non-Anniversary Reaction Groups

Subjects with an anniversary reaction had significantly higher scores on the Mississippi Scale, $t = 3.12$, $df = 57$, $p < .002$, and the Desert Storm Trauma Questionnaire, $t = 2.9$, $df = 57$, $p < .004$, compared to those who did not. They also endorsed significantly higher scores on the BSI as reflected by the total score, $t = 2.35$, $df = 22.1$, $p < .02$, and by the scores on BSI sub-scales of Obsessive-compulsive, $t = 2.6$, $df = 22.2$, $p < .01$, Hostility, $t = 2.09$, $df = 21.2$, $p < .04$, Interpersonal sensitivity, $t = 2.5$, $df = 21.3$, $p < .01$, Depression, $t = 2.54$, $df = 22.2$, $p < .01$, and Psychoticism, $t = 2.5$, $df = 19.5$, $p < .01$. Subjects did not differ significantly on the BSI subscales of Somatization, Phobic Anxiety, Anxiety, or Paranoia.

Only three subjects selected a "feeling BEST" month and one subject a "LEAST symptoms of stress" month that corresponded to the month of their most severe trauma. This frequency of endorsement is less than that expected by chance alone (17%) and supports the idea that anniversary reactions are predominantly distressing experiences.

Discussion

To our knowledge, this is the first study to provide empirical evidence for anniversary reactions in combat veterans. In the group as a whole these anniversary reactions occurred with a frequency that was nearly twice that expected by chance alone. Of note, most of the anniversary reactions occurred in members of the medical unit where the number of such reactions ($n = 15$) was approximately three times greater than expected by chance ($n = 4.8$). In contrast, only three members of the military police unit experienced anniversary reactions, a frequency slightly below that expected by chance ($n = 4.8$).

The increased frequency of anniversary reactions in the medical unit may be related to the types of traumatic events experienced by members of that unit. It appears that some events are more likely than others to be matched with anniversary reactions. The majority of anniversary reactions (12 of 18) were associated with events involving loss of life, suggesting that witnessing loss of life may serve as a powerful stimulus for the development of anniversary reactions.

In addition to the specific type of stressor, the *number* of different stressors to which one is exposed may play an important role in the development of anniversary reactions. Subjects with anniversary reactions had significantly higher scores on the Desert Storm Trauma Questionnaire compared to those without anniversary reactions. These higher scores suggest that multiple traumas may have an additive effect with regard to subsequent symptomatology.

Individuals with anniversary reactions reported significantly greater symptomatology as measured by the Mississippi Scale. This raises an important question about the nature of the relationship between anniversary reactions and PTSD. Of the 6 subjects in the study who met criteria for PTSD, all 6 (100%) had anniversary reactions. Of the subjects who did not have PTSD only 12 (20%) had anniversary reactions. These findings raise the possibility that anniversary reactions may be an important aspect of PTSD that has not been included in formal DSM-IV criteria.

The limitations of this study are clearly those of subjective accounts and of a small sample size. However, as our previous reports from this project have indicated, there is a greater likelihood of under-reporting in this population of veterans than over-endorsement of dysfunction. The small sample size reflects the inherent difficulties encountered in a longitudinal study. Many subjects from the original group of veterans were unavailable for, or declined participation in the study at the 2 year time-point. However, it is likely that the current data are representative of the group as a whole. In an earlier report on this same sample of veterans, we found that subjects who dropped out of the study were equally symptomatic compared to those who continued to participate (Southwick et al., 1995). Another limitation of this study is that these data do not provide any information about the permanence of anniversary reactions. Future follow-up studies will address this question as a part of the ongoing longitudinal investigation in these veterans.

References

Beratis, S., Gourzis, P., & Gabriel, J. (1994). Anniversary reaction as seasonal mood disorder. *Psychopathology, 27*(1-2), 14-18.

Bornstein, P. E., & Clayton, P. J. (1972). The anniversary reaction. *Diseases of the Nervous System, 33*(7), 470-472.

Birtchnell, J. (1981). In search of correspondences between age at psychiatric breakdown and parental age at death—'Anniversary Reactions.' *British Journal of Medical Psychology, 54* (Pt 2), 111-120.

Cavenar, J. O., Nash, J. L., & Maltbie, A. A. (1977). Anniversary reactions masquerading as manic-depressive illness. *American Journal of Psychiatry, 134*(11), 1273-1276.

Derogatis, L. R. (1975). *Brief Symptom Inventory.* Baltimore: Clinical Psychometric Research.

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13*, 595-605.

Green, C. M. (1982). Filicidal impulses as an anniversary reaction to childhood incest. *American Journal of Psychotherapy, 36*(2), 264-271.

Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi Scale for Combat-Related Posttraumatic stress disorder: Three studies in reliability and validity. *Journal of Consulting Clinical Psychology, 56,* 85-90.

Marsh, R. W., & Peery, C. J. (1977). Anniversary reactions in military aviators. *Aviation Space & Environmental Medicine, 48*(1), 61-64.

Miller, S. P. (1978). Amenorrhea and anniversary reaction in a woman presenting with chest pain. *American Journal of Psychiatry, 135*(1), 120-121.

Minz, I. (1971). The anniversary reaction: A response to the unconscious sense of time. *Journal of the American Psychoanalytic Association, 19*(4), 720-735.

Musaph, H. (1990). Anniversary reaction as a symptom of grief in traumatized persons. *Israel Journal of Psychiatry & Related Sciences, 27* (3), 175-179.

Sanger, M. D. (1970). The psychosomatic allergy. *Psychosomatics, 11*(5), 473-6.

Southwick, S. M., Morgan, C. A., Nagy, L. M., Bremner, D., Nicolaou, A., Johnson, D. R., Rosenheck, R., & Charney, D. S. (1993). Trauma-related symptoms in veterans of Operation Desert Storm: A preliminary report. *American Journal of Psychiatry, 150*(10), 1524-1528.

Southwick, S. M., Morgan, III, C. A., Darnell, A., Bremner, D. J., Nicolaou, A., Nagy, L. M., & Charney, D. S. (1995). Trauma-related symptoms in veterans of Operation Desert Storm: A 2-year follow-up. *American Journal of Psychiatry, 152*(8), 1150-1155.

Weiss, E. (1958). The clinical significance of the anniversary reaction. *General Practitioner,* Vol. XVII, Number 4.