S.	Silvio	Ćurin
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National Institute for Health Insurance, Split, Croatia

The Incidence of Cerebrovascular Insult in the City of Split, Croatia, during the 1991/1992 War

Silvio Ćurin, MD, National Institute for Health Insurance, Regional Office Split, Kralja Branimira 14, 58000 Split (Croatia)

Two recent reports presented the effects of war in Croatia on the mortality caused by acute myocardial infarction in the Zagreb area [1], and the incidence of stress-related acute myocardial infarction and gastrointestinal hemorrhages in Split [2], the major coastal city of Croatia [3]. Prompted by these studies, I investigated into the incidence of the cerebrovascular insult (CVI) in prewar and war years. CVI is the third most common cause of death in Croatia, following myocardial diseases and malignant tumors [4]. The hostilities in Croatia began in August 1990 with traffic blockade, developed into armed conflicts in April 1991 and finally into a full-scale war in the summer of 1991. On January 3rd 1992, United Nations-sponsored armistice was signed, but shelling of Croatian cities continued throughout the first part of 1992 [5]. This study utilized the data collected by the Croatian National Institute for Health Insurance, Regional Office Split, where all patients needing rehabilitation filed the respective request. The data from this agency are complete and reliable since all subjects in Croatia are covered by insurance [6], and no cases are referred to private services or to services outside the region. The source of the data were patients' files with diagnosis verified by a medical examination board of 3 specialist physicians. All CVI patients report to the agency, because essentially they all enter the posthospital rehabilitation treatment. The diagnosis of CVI was made as group VII 430–436 of the 9th Revision of the International Classification of Diseases, Injuries and Causes of Death [7]. The rehabilitation has been conducted in several rehabilitation hospitals throughout the country (Vela Luka, Makarska, Split, Varazdin, etc.). A total of 2,073 patients from the city of Split, who were referred for posthospital rehabilitation treatment in 1989 (the year preceding the outbreak of war) and 1992, when the war had already subsided, were included in this study: 706 in 1989 and 1,367 in 1992 (table 1). The number of patients with CVI diagnosis amounted to 44 (6.2%) in 1989. The prevalence of CVI patients significantly increased in 1992, amounting to 229 (out of total of 1,367 patients, i.e. 16.7%, $p < 0.01$). A statistically significant shift of CVI patients into the older age group was registered in the war year: there were 60% of CVI patients over the age of 60 in 1992, vs. 32% in 1989 (table 1). The finding of an increased referral for posthospital rehabilitation during the war suggests an increased incidence of CVI, but caution is needed before concluding that the war increased the incidence of CVI. Namely, it is possible that the war somehow changed the pattern of CVI fatality or the referral for rehabilitation. However, (a) in comparison to 1989, the fatality of CVI in this region of Croatia appeared to increase slightly in 1992 (207 vs. 237 deaths; source: Croatian National Institute of Public Health, Zagreb); and (b) it is difficult to envisage how the war could change the pattern of the referral for rehabilitation since the disease affects older population and makes the patients noneligible for military recruitment; in other words, it is not probable that the disease was (mis)used by people to avoid military recruitment. Finally, although the city of Split and the surrounding area hosted thousands of refugees and displaced persons [8], their medical records were processed separately and they were not included in this study. CVI is a severe social and medical problem because it produces many physically and psychically handicapped persons; among the survivors, only a small number fully recover, while a majority continue to suffer from diverse functional defects [9]. The posthospital care for CVI patients has been particularly affected by the war, which not only took a heavy toll in civilian casualties and material damage [5, 10], but also caused a major damage to the health care system [5, 6, 10]. In such conditions, the provision of care for post-CVI patients will be very difficult.

Table 1. The data of the State Institute for Health Insurance, Regional Office in Split, Croatia: Total number of insured persons, posthospital rehabilitation patients and patients with CVI

Year investigated		
1989		
1992		
267,584		
1,367	840	527
61:39	229(16.7%)*	
92 (40%)**	137(60%)**	
Insured persons	259,284	
Posthospital rehabilitation patients		
Both sexes	706	
Men	416	
Women	290	Men/women 59:41
CVI	44 (6.2%)	
CVI age distribution		
<60 years	30(68%)	
>60 years	14(32%)	

Statistical significance of the difference was assessed by a χ^2 test at the conventional two-tailed alpha level of 0.05: * $p < 0.01$; ** $p < 0.001$. War operations in Croatia lasted from May 1991 to May 1992.

Short Reports

Acknowledgement

The encouragement and help provided by Dr. Matko Marusic are warmly acknowledged.

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