



Original article

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SPONTANEOUS MISCARRIAGES AND STRESS DURING BOMBARDMENT OF FR OF YUGOSLAVIA

SUMMARY

The aim of the paper was to investigate the impact of stress on incidence of major miscarriages during the bombing of the FR of Yugoslavia. The data have been collected retrospectively from the official fetal death records of the Leskovac District Health Center and processed using χ^2 test. The Leskovac Health Center is the only hospital providing medical services to 250,000 residents of the Jablanica District in the South of Serbia. The study includes 81 cases of spontaneous miscarriage after the 12th week, and with fetus weight under 1,000 grams, in the period between March 24 – June 9 of the year before, during and the year after air attacks in 1999. Data on miscarriages in the embryonic period are not included in the survey since there are no reliable sources in our databases. A significant increase in the incidence of spontaneous miscarriages after the 12th week of gestation is registered in the period of bombardment compared to the same period the year before. A significant increase in the incidence in the year after the bombardment would be more in accord with the results obtained from the Gulf War published in America and Kuwait. In that respect, there are only indications in our study proving that direct consequences of stress on pregnancy are considerable. The mechanism of stress considerably increased the incidence of spontaneous miscarriages but only during the bombardment.

Key words: war, stress, pregnancy, miscarriage

INTRODUCTION

The three-month long bombardment of the FR of Yugoslavia – March 24 to June 9, 1999 – was the cause of stress and considerable environmental pollution as well. The strategy of destruction of civilian infrastructure and petrifying of civilians was applied across the entire territory of our country. The propaganda that contributed to this climate just confirms the Loyd de Manse theory of social aggression and prenatal stress association. Archetypes, taboos and myths on war-time pregnancies (always present in human minds) have been frequently used for propaganda for the purpose of impairing

objective reasoning (1).

Here is how Ashford and Gottstein, the authors from University of Victoria, Canada describe the bombardment: " large amounts of several highly toxic chemicals were liberated into the environment by bombing. Targeting of electrical generating plant, water treatment facilities, Danube bridges, railways and roads has adverse effects on civilian life, endangers health and seriously affects health care. The military strategy of attack on civilian infrastructures is a war on public health" (2).

During stress, secretion of corticotrophin-releasing hormone that stimulates production of trophoblastic prostaglandins E_2 and F_2 intensifies.

The stimulating impact of prostaglandins on the uterus muscle in some pregnant women (if predisposed) may initiate spontaneous miscarriage (3).

The increase in the incidence of miscarriages after the bombardment is also listed as one of numerous symptoms of the post-traumatic stress disorders (PTSD) (4).

In her study, Araneta et al. reports a significant increase in the number of complications in pregnant women who took part in the Gulf War, including fetal deaths and spontaneous miscarriages (5).

After the same war, Rajab, et al. also found an increased number of spontaneous miscarriages in Iraq, Kuwait and Bahrain (6).

The above authors are of the opinion that such an increased incidence of spontaneous miscarriages after the war was caused by both stress and environmental pollution. However, they do not offer any data on miscarriages during the war itself when stress and pollution were the most intense.

It is therefore quite possible that both the post-traumatic stress disorder and environmental pollution led to an increased incidence of spontaneous miscarriage in the period after the bombing as well, so that the period has been investigated in this study.

Aims

A working hypothesis has been established that the three-month stress during the bombardment increased the incidence of spontaneous miscarriages. This stress effect will be proved by comparing the incidences of major spontaneous miscarriages in the same period of the year before and the year after the bombardment with the incidence during the period of bombardment.

Selection of patients and methodology applied

The incidences of major spontaneous miscarriages have been compared using the χ^2 test in a retrospective study of the relevant data from the official fetal death records of Leskovac Hospital for the periods March 24 – June 9, 1998, 1999 and 2000. The study included 81 cases of major miscarriages in the second trimester with fetus weight under 1,000 grams treated at the Leskovac Hospital. This hospital is the only health institution of the kind providing medical services to 250,000 residents of the Jablanica District. Data on miscarriages in the embryonic period are not included in the survey, since such cases are treated at several other locations keeping unreliable records.

RESULTS

Table 1. Spontaneous miscarriages in the second trimester before, during and after the bombardment

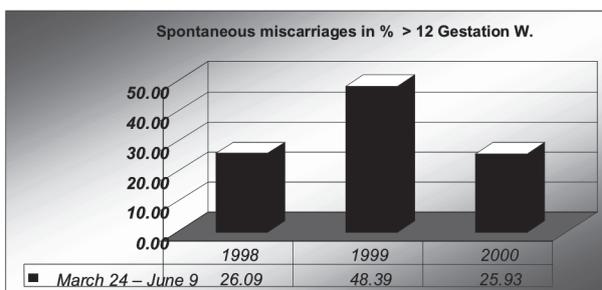
Major miscarriages	1998		1999		2000	
For the entire year	23	100%	31	100%	27	100%
March 24 – June 9	6	26%	15	48%	7	26%

It has been proved, using the χ^2 test, that major spontaneous miscarriages were statistically significantly more frequent during the period of bombing than in the same period of 1998.

[$\chi^2 = 3.048 > \chi^2(1; 0.1) = 2.706$] compared to $p < 0.1$.

In the same period of the year after the bombing, the incidence of spontaneous miscarriages after the 12th week of gestation decreased to the level recorded before the bombardment.

Figure 1. Spontaneous miscarriages in the third trimester before, during and after the bombardment



DISCUSSION

Pregnancy interruptions with fetuses under 1,000 grams of body weight after the 12th week of gestation are registered in our country as miscarriages and recorded as such in the official fetal death records. Fatal outcomes in fetuses over 1,000 grams of body weight are registered in the official delivery records as fetal or neonatal deaths. Although one can reasonably assume that the number of miscarriages in the first trimester during the air raids was above the average (including intended abortions of previously wanted pregnancies), no reliable records related to them exist in our databases any more. On the other hand, the second trimester miscarriages are rarely treated outside hospital due to risks involved and therefore most of such miscarriages are duly recorded in the official fetal death records. That is why the existing data on such miscarriages (we have named 'major miscarriages') have been used to demonstrate the total incidence of miscarriages in the observed period as well.

Our results show that the stress mechanism significantly increased the number of major miscarriages during the bombing compared to the

same period of the year before, while the number of miscarriages in the year after came down to the average number. The absence of statistically significant difference after the bombardment could confirm the research of Arenata MR and Rajaba KR if a greater number of people would be taken into consideration. Regarding our sample, there is no statistically significant difference between the incidence of miscarriages in the year before and after the bombardment as well as for the three years, which is probably the consequence of the minor number of cases.

Apart from the aforementioned impact on the incidence of miscarriages, one should bear in

mind that many women interrupted their pregnancy on purpose or simply refrained from conception during the air raids – the cases we have not taken into consideration in this survey, since there are no reliable data on such occurrences.

CONSLUSION

Stress increased the incidence of spontaneous miscarriages during the bombardment of the FR of Yugoslavia.

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SPONTANI POBAČAJI I STRES ZA VREME BOMBARDOVANJA SR JUGOSLAVIJE

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SAŽETAK

Cilj rada bio je proveriti uticaj stresa na incidenciju spontanog pobačaja. Podaci su prikupljeni retrospektivno iz protokola rane fetalne smrtnosti za pobačaje preko 12 NG do 1000 g TM na odeljenju ginekologije Opšte bolnice Zdravstvenog centra Leskovac. Bolnica u Leskovcu je jedina stacionarna zdravstvena ustanova u Jablaničkom okrugu za 250000 stanovnika južne Srbije. Studija uključuje 81 spontani pobačaj posle 12. nedelje do 1000 grama telesne mase (veliki pobačaji) u periodu 24. mart – 9. jun, godinu dana pre, tokom i godinu dana posle bombardovanja 1999. godine. Rezultati su prikazani tabelarno i grafički i ispitani χ^2 testom. Pobačaji u embrionalnom periodu nisu ispitivani jer o njima kod nas više nema pouzdanih izvora. Tokom bombardovanja SR Jugoslavije značajno je povišena incidencija spontanog pobačaja posle XXII nedelje gestacije u odnosu na isti period prethodne godine. U izveštajima iz zalivskog rata povećana incidencija spontanog pobačaja nađena je samo posle rata. Na našem uzorku, incidencija spontanog pobačaja godinu dana posle bombardovanja u istom periodu vratila se na uobičajeni prosek. Stres je povećao incidenciju spontanog pobačaja neposrednim uticajem na trudnice tokom bombardovanja.

***Ključne reči:* rat, stres, trudnoća, pobačaj**