

# Peptic ulcer bleeding in Belarus

## Kraujavimas iš peptinės opos Baltarusijoje

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### Background / objective

The aim of the present paper is a multilevel quantitative review of urgent operations due to peptic ulcer bleeding in Belarus.

### Methods

We reviewed the statistics of the Public Health Ministry of the Republic of Belarus to determine the absolute number of surgical interventions in the regions and in Minsk during 1990 to 2004. Individually for the Gomel region, the similar statistics of the Regional Health Department were analyzed since 1980. It is noteworthy that before 1990, interventions due to ulcer bleeding were ignored in the reports of Ministry for Health of the USSR and of the Republics. With the account of demographic changes, the relative annual frequency of relevant operations was determined per 100,000 inhabitants. The analysis includes also the dynamics of surgeries for ulcer bleeding during 1990-2004.

### Results

Since the early 90s, a distinct rise of urgent operations for ulcer bleeding amounted to 1.5-2.0 and more times in Belarus. Since the second half of the 90s, the number of operations stabilized relatively at a level of 10-12 interventions per 100,000 annually. The number of hospitalizations with ulcer bleedings reached 60 per 100,000 and tends to grow.

### Conclusions

The number of operations for ulcer bleeding tends to reduce in the recent years due to extensive implementation of conservative methods of hemostasis rather than to reduction of bleedings proper.

**Key words:** bleeding gastroduodenal ulcers, urgent operations, surgical activity

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### Introduction

The problem of peptic ulcer (PU) bleeding for native medicine remains as challenging as ever before [1, 2, 3, 4]. A drastic rise in the incidence of complicated PU cases after the USSR collapsed has led to mortality growth of this cause [5, 6, 7]. The main cause of

mortality is known to be the accompanying bleeding. On the average, 20-25% PU patients demonstrate this complication. In the economically developed countries they are, as a rule, aged or senile patients, about 1/5-1/3 of them having been treated with non-steroid anti-inflammatory drugs (NSAID). An-

nually ulcer bleeding causes over 100 and more admissions per 100,000 inhabitants [8, 9, 10], of them 10–20% are treated surgically [4, 10, 11]. The results of international cohort studies during the last three decades of the 20<sup>th</sup> century show that the total mortality remains practically unchanged notwithstanding better results of surgical and endoscopic treatment, transfusion therapy, introduction of reliable blockers of gastric secretion [8, 12, 13]. The lack of local epidemiologic PU studies and highlighting of secondary aspects of the problem generates contradictions, misunderstanding, or false illusions sometimes, among doctors of various specialities.

The aim of the present paper is a multilevel quantitative review of urgent operations due to the bleeding of ulcer etiology in Belarus.

## Methods

We reviewed the statistics of the Public Health Ministry of the Republic of Belarus to determine the absolute number of surgical interventions in the regions and in Minsk during 1990 to 2004. Individually for the Gomel region, the similar statistics of the Regional Health Department were analyzed since 1980. It is noteworthy that before 1990, interventions due to ulcer bleeding were ignored in of the reports of Ministry for Health of the USSR and of the republics. With the account of demographic changes (data of the Ministry of Statistics and Analysis of the Republic of Belarus), the relative annual frequency of relevant operations was determined per 100,000 inhabitants. The analysis includes also the dynamics of surgeries for ulcer bleeding during 1990–2004. For comparison, a ratio between urgent operations for ulcer perforations and ulcer bleeding or the structure of PU urgent surgeries was evaluated. The figures of post-surgery mortality were analyzed.

## Results and discussion

The Gomel region is unique in the Republic of Belarus because here data on surgeries for ulcer bleeding are available since 1980, i. e. a whole decade more than for the other regions. The value of this information is not only that it covers a long period of analysis. It is

an essential fact that the Chernobyl accident in 1986 affected most severely the Gomel region. Therefore, we had an opportunity to evaluate the dynamics of surgeries of bleeding ulcers in this region with the allowance of the Chernobyl accident aftermath. In the 80s, the operations numbered 86 in 1984 versus 139 in 1990 on the average per decade, or  $109.9 \pm 6.4$  interventions per year. It should be noted that before 1986 the number of operations for ulcer bleeding always stayed under 100 while in 1986 and 1987 they numbered 131 and 134, respectively. In the subsequent years the number of operations somewhat reduced, and in the 90s the number of interventions began with 109 and kept growing thereafter to 230 in 2000. In the 90s the average number of urgent surgeries was  $171.8 \pm 13.5$  per year. Early next decade the number of operations for bleeding fell down noticeably; for example, from 230 operations in 2001 versus 176, 188 and 174 in 2002, 2003, 2004, respectively.

The relative frequency of urgent operations for ulcer bleeding in the Gomel region ranged in the 80s between 5.4 in 1981 to 8.5 per 100,000 in 1990, making up the mean of  $6.6 \pm 0.4$  per decade. It means that the relative frequency of urgent operations for ulcer bleeding in the region in the 80s was much below 10 per 100,000 per year. In the 90s, the number augmented from 6.8 in 1991 to 15.0 in 2000 or 2.2 times, making up the mean of  $11.0 \pm 0.9$  per decade. During 2001–2004, the value in question reduced from 15.0 to 12.4, however, this change is due to surgical activity during ulcer bleeding rather than to a reduction of the number of the latter. Figure 1 represents vividly the relative frequency of urgent operations for ulcer bleeding. Between 1980 and 2001, the number grew stably, with a gently sloping peak in 1986 and 1987 and a distinct drop after 2001.

The relative number of operations for perforation versus that for bleeding in the 80s, amounted to  $2.4 \pm 0.2$  on the average versus  $2.3 \pm 0.1$  during the first four years of the new decade.

During 80s operations for bleeding made up just 14.4% of all PU interventions on the average versus 19.4% in the 90s and 23.2% during 2001–2004.

The surgical activity for ulcer bleeding in the region was 27.5% during the first half of the 90s versus

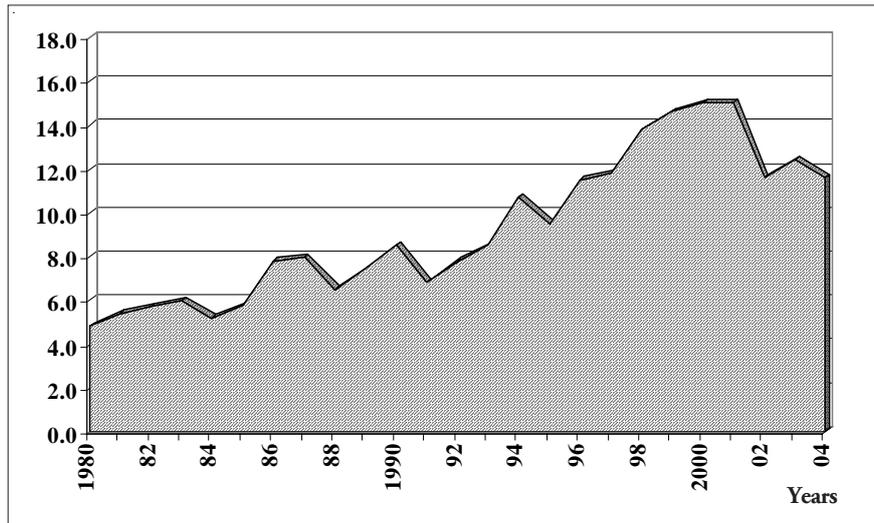


Fig. 1. Relative number of operations for peptic ulcer bleeding in Gomel region (cases per 100,000 inhabitants)

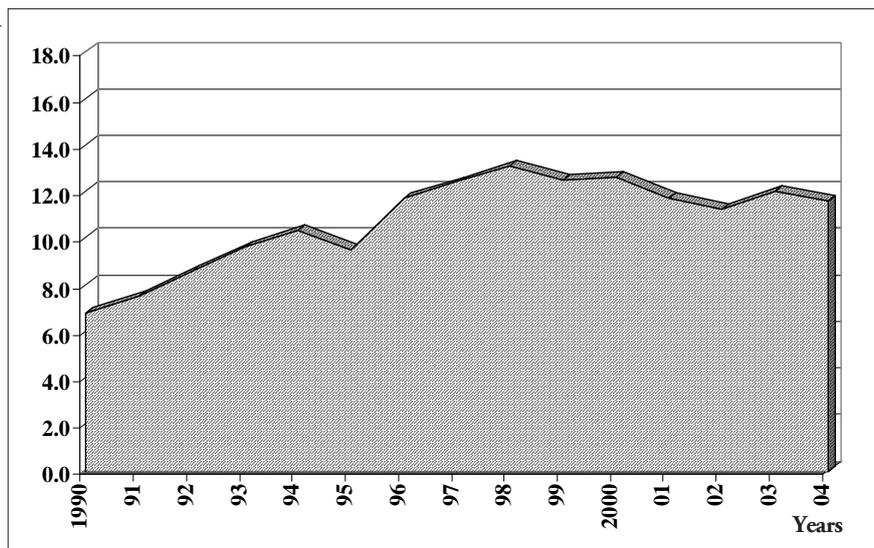


Fig. 2. Relative frequency of operations for peptic ulcer bleeding in the Belarus (cases per 100,000 inhabitants)

26.5% during the second half; it reduced to 22.0% during the four years of the new decade. It means that there is no actual trend of reduction of ulcer bleedings in the region so far.

The post-operation mortality during the first half of the 90s was 9.1% versus 5.5% during the second half and 2.6% during 2001–2004.

The frequency of operations for ulcer bleeding affected naturally both the Gomel region and the en-

tire Belarus. While 690 patients were operated on for ulcer bleeding in 1990 in the republic, the largest number, or 1322 interventions during the period in question, occurred in 1998, or 1.9 times more. During 1990–1994 (the first third of the period in question),  $874.8 \pm 63.7$  of patients were operated on per year versus  $1197.6 \pm 25.7$  in 1995–1999 and  $1143.0 \pm 26.1$  in 2000–2004. The relative frequency of urgent operations for bleeding during the

entire period in question was within 6.8–13.1 per 100,000 per year. During 1990–1994, the average number was  $8.6 \pm 0.6$  operations per year versus  $11.8 \pm 0.2$  during 1995–1999 and  $11.8 \pm 0.1$  during 2000–2004. Figure 2 shows the dynamics of relative frequency of operations for ulcer bleeding in Belarus. There is a clear growth of the number between 1990 and 1998; its stabilization began since 1998 with an insignificant tendency to reduce. However, to assess the real dynamics of the peptic ulcer bleeding frequency in the population is possible provided the surgical activity in this complication is considered. According to the official statistics, the latter figure was 26.0% on the average during 1990–1994 versus 25.7% in 1995–1999, and it reduced to 20.4% in 2000–2004. The bleeding ulcer surgical activity keeps declining during the recent years in the Republic of Belarus much faster than the relative frequency of operations. It indicates, in turn, that there is no tendency of reduction of ulcer bleedings proper. To prove, it we quote data on the total number of patients hospitalized with bleeding gastroduodenal ulcers during the recent years. While 5.100

patients were treated in-hospital in 1999 in the Republic of Belarus, the number was about 5,700 in 2000–2002 annually, 6,000 and 5,800 in 2003 and 2004, respectively. Figure 3 shows the share of the total number of patients treated in hospital and operated on for ulcer bleeding in Belarus throughout the period in question. It is apparent that there is a consistent, nearly doubling growth of ulcer bleedings with stabilization of the number of operations during recent years. It is hard to assert unambiguously if the trend will persist in the future. One thing that can be asserted with full confidence is that internists feel an exaggerated optimism about PU treatment outcomes, relying on recent achievements in theoretical gastroenterology and pharmacology in local conditions.

Unlike the economically developed countries, the number of operations for ulcer bleeding in the 90s in Belarus was 2.1 times less than that of the operations for perforative ulcers. This PU complication became the most frequent motive for operations. The ratio of the peptic ulcer in surgery is apparently typical of any socially critical period when a significant share of pa-

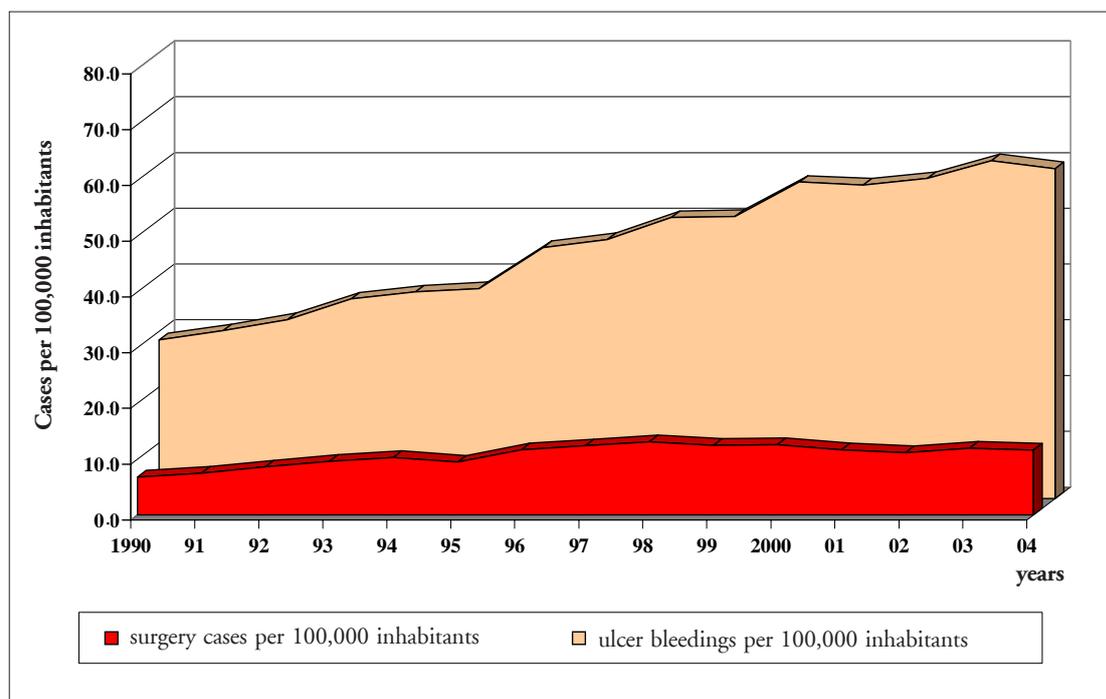
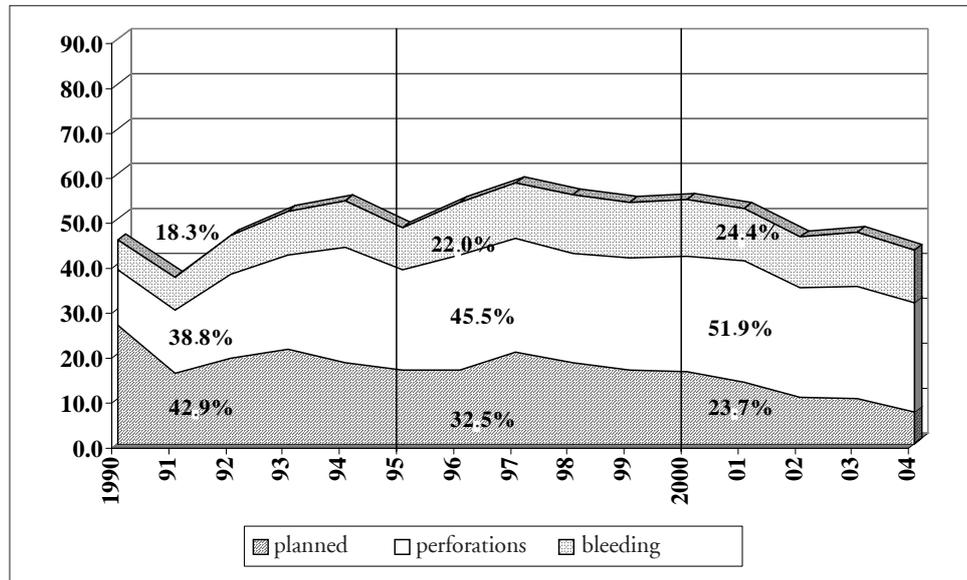


Fig. 3. Dynamics of relative frequency of ulcer bleedings and number of relevant operations in the Republic of Belarus (cases per 100,000)



**Fig. 4.** Structure and total relative number of operations for peptic ulcer in the Republic of Belarus (cases per 100,000)

tients loses access to all adequate conservative treatment. The share of operations due to bleedings in the total number of PU surgical interventions was growing distinctly during the period in question. It amounted to 18.3% in 1990–1994 to 22.0% in 1995–1999 and already to 24.4%, or one quarter, in 2000–2004 (cf. Fig. 4). The specific share of all urgent operations (bleeding or perforations) during the same years amounted to 57.1%, 67.5%, and 76.3%. The share of elective operations was reducing dramatically to 42.9%, 32.5% and just to 23.7% during 2000–2004. These changes make it unnecessary to discuss the dynamics of total PU mortality, as it is apparent.

The officially reported post-operation mortality due to ulcer bleeding amounted to 10.0% during 1990–1995, 5.3% during 1996–2000 and just 3.4% during 2001–2004, with a pronounced mortality reduction being observed universally. Throughout the period the mortality declined 2.4 times in the Vitebsk region, 4.2 times in Minsk and 2.9 times on the average in the Republic of Belarus. If the tendency continues, the mortality of ulcer bleedings should reach zero already in the near future! Based on the indicator discussed here, the situation in the Republic of Belarus looks more favorable than that of our neighbors in Russia, Ukraine, Baltic republics [1, 4, 5, 6, 7]. It is hard to state unam-

biguously who is to blame for the “achievements”, surgeons who report these figures or those who demand them to be such. The “figure perfection” confuses public opinion about medicine, conceals the problem urgency, and thus postpones its solution.

The multiyear monitoring of urgent operations for the most severe PU complication in Belarus in general and in its regions shows that the incidence of ulcer bleeding grows consistently. The share of interventions for bleeding ulcers is observable too in the surgical burden structure. If the gravity of the situation is compared among the regions, while general tendencies coincide, the “leadership” of the Moguilev region should be highlighted in both the total frequency of bleedings (up to 70 treated annually per 100,000) and the frequency of PU operations. The figures of post-operation mortality in this region throughout the period corresponded to the average in the republic. The least number of ulcer bleedings was observed in the Grodno and Minsk regions, while the post-operation mortality in these regions exceeded the average republican figures. The least relative urgent operations and the least surgical burden throughout the period in question were registered in the Brest region. However, the post-operation mortality was stably over the mean in the republic, and in the second half of the 90s it was maxi-

imum in the Republic of Belarus. The official statistics for the first half of the 90s and the first years of the new decade report the maximum figures of post-operation mortality (14.3% and 4.7%, respectively) in the Minsk region. The least post-operation mortality and the highest surgical activity throughout the period of observation were noted in the Vitebsk region. It might be explained by a more extensive application of organ-preserving techniques in the region with vagotomy during urgent or elective PU surgeries. The mortality after these interventions is known to be much less than during resections most popular in Belarus for such PU complications.

Modern medicine equipped doctors with tools to fight ulcer bleedings, still this rather difficult problem can apparently be resolved in the sphere of organization. General reduction of urgent surgeries is definitely a positive aspect when this PU complication occurs. It has been achieved by a higher efficiency of endoscopic hemostasis, a lower risk of recurrent in-hospital bleeding by reliable inhibition of gastric secretion and prevention of peptic lysis of thrombotic masses in the ulcer. To this end, the most popular in the Republic of Belarus is quamatelium, the parenteral form of the H-2 blocker of histamine receptors of phamotidinum. With this in mind, about 70% of ulcer bleedings have duodenal localization; in contrast with resections, a more extensive use of organ-preserving techniques can also diminish strongly the risk of urgent operations.

It should be admitted that the objective reasons of the critical period experienced by the "post-soviet" states aggravated the ulcer problem as a socially dependent disorder. The wish to follow blindly the "western" standards of reduction of elective surgical interventions in case of PU in our conditions leads to a significant leap of urgent interventions, hence to a rise of total mortality and disablement of patients. We are convinced that the top-priority trend of solving the PU problem should be prevention of PU complications dangerous to life rather than a general combat of Helicobacterial infections extolled by some advocates of gastroenterology or the intention to eradicate the PU diseases itself. This strategic aim is achievable through a combination of modern conservative therapy and preventive elective surgical treatment of

the potentially threatened contingent of patients. The criterion of the effectiveness of organizational and therapeutic actions in solving the problem is a stable reduction of the need of urgent operations for ulcer bleeding and perforation.

When discussing the possible prospects of progress in ulcer bleeding situation, we presume that the frequency of ulcer bleedings should cease to grow and reach the "soviet" level, and access to effective conservative PU treatment will expand as our society overcomes the critical period. The main contingent of patients will shift to the aged and senile cohort. Like in the economically developed countries, the NSAID will gain more significance in the ulcer bleeding genesis. Similarly, the proportion between male and female patients will become more balanced. The frequency of urgent operations for ulcer bleeding will gradually outweigh that for perforative ulcers due to a faster reduction of perforations among patients. Any noticeable reduction of post-operation and general mortality should not apparently be expected. Still, predictions are known to be ungrateful. Hence, let us hope that future belongs to optimists.

## Conclusions

Since the early 90s, a distinct rise of urgent operations for ulcer bleeding amounted to 1.5–2.0 and more times in Belarus.

Since the second half of the 90s, the number of operations stabilized relatively at a level of 10–12 interventions per 100,000 annually.

The number of hospitalizations with ulcer bleedings reached 60 per 100,000 and tends to grow.

During the last two decades of the 20<sup>th</sup> century, in the Gomel region the number of operations for ulcer bleeding has trebled and tends to reduce in the recent years.

During two years after the Chernobyl accident, the number of operations for ulcer bleeding rose by one third in the Gomel region.

The number of operations for ulcer bleeding tends to reduce in the recent years due to extensive implementation of conservative methods of hemostasis rather than to reduction of bleedings proper.

The share of operations for ulcer bleeding of the total PU interventions has increased remarkably in Belarus and makes up one out of four.

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*Received: 29-06-2006*

*Accepted: 23-10-2006*