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Original paper

The global mortality from gastro-duodenal ulcers: where are we now?

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Abstract

Even though digestive ulcers (both gastric and duodenal) are now considered diseases with a high degree of curability due to modern diagnostic and treatment techniques, they are still one of the main causes of superior digestive hemorrhage mainly in underdeveloped countries. There were times when a very big part of general surgery consisted in the surgical cure of digestive ulcers. Times have changed and the wide introduction of proton pump inhibitors, the improvement of endoscopic diagnostic and treatment methods along with the discovery of *Helicobacter Pylori*'s role in the apparition of ulcers have changed the therapeutic management of this disease forever. Consequently, the need for surgical intervention has diminished as well as the rate of bleeding/perfusion complications. However, mortality rates due to gastric and duodenal ulcers are still high especially in developing countries and areas where access to quality surgical services is diminished or even absent. This study aims to assess the impact of new pre- and perioperative diagnosis and management methods in the mortality and morbidity due to gastric and duodenal ulcers, according to the information available in the WHO database during the last 20 years.

Keywords Gastric ulcer, duodenal ulcer, mortality.

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Introduction

Peptic ulcers are defined as a loss of substance in the gastric and duodenal mucosa and underlying layers due to an imbalance between defense mechanisms and injurious factors (YANG [1]). With the latest advances in the management of peptic ulcers the need for surgery has decreased significantly all around the world. The technology used in endoscopy today is a culmination of ideas and tools developed in thousands of years and perfected by the advancements of the 20th century (HESKETT [2]). Proton Pump Inhibitors have been clinically introduced more than 25 years ago. Since then, they have been a safe and invaluable agent in the management of acid-related disorders of the digestive system (STRAND [3]).

The guidelines on the management of *Helicobacter pylori*, one of the main agents that cause peptic ulcer diseases, were drafted for the first time in the year 2000 (the Maastricht 2 Consensus Report – 2000) and perfected since then (MALFERTHEINER [4]).

Materials and Method

We used information available in the WHO database. We selected data from countries that had reported national mortality rates due to gastro-duodenal ulcers annually between 1994-2014 as well as those who had a mortality value higher than 100 deaths/year. Countries from all around the world are represented, thus giving us a chance to get a general idea about the worldwide trend and to compare results (Table 1).

Table 1. Countries included in the study

Argentina	Colombia	Germany	Mexico	Romania	United Kingdom
Australia	Croatia	Guatemala	Norway	Russia	USA
Austria	Cuba	Hungary	Peru	South Africa	
Belgium	Czech Republic	Italy	Poland	Spain	
Brazil	Ecuador	Japan	Portugal	Sweden	
Bulgaria	Finland	Kazakhstan	Rep of Korea	Thailand	
Canada	France	Lithuania	Rep of Moldova	Ukraine	

Results

The total annual number of gastric and duodenal ulcer deaths has decreased by 34% in the last 20 years in the selected countries (Figure 1). However, due to unknown reasons, there are some countries that do not respect the trend: Brazil, Croatia, Italy, Kazahstan, Lithuania, Peru, Russian Federation, South Africa. Italy was the only one

with an ascending pattern but beneath the trend line. The rest of the countries have had a chaotic pattern that did not respect any rule (Figure 2). Regarding gender, more males than females have died from gastric or duodenal ulcers complications (Figure 3).

The average number of deaths per 100.000 inhabitants has two extremes: the lowest one in France at 0.5 and the highest one in Greenland which has had 9 deaths per 100.000 inhabitants (Figure 4).

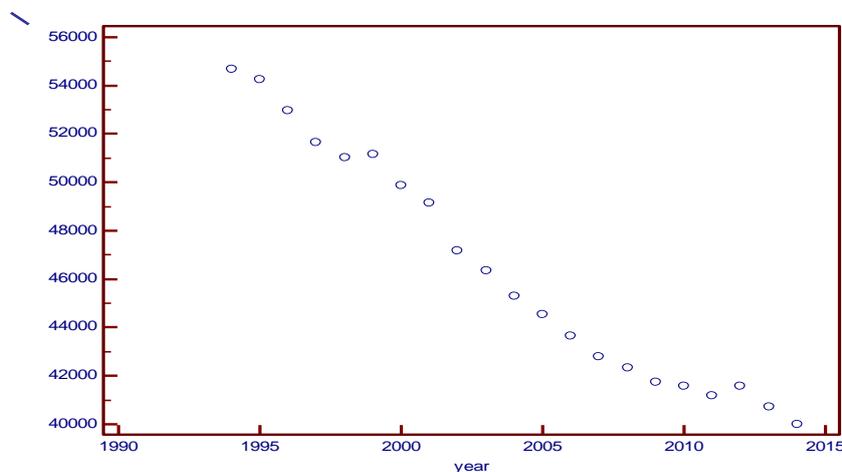


Figure 1. The regression of deaths by duodenal or gastric ulcer between 1994 and 2014

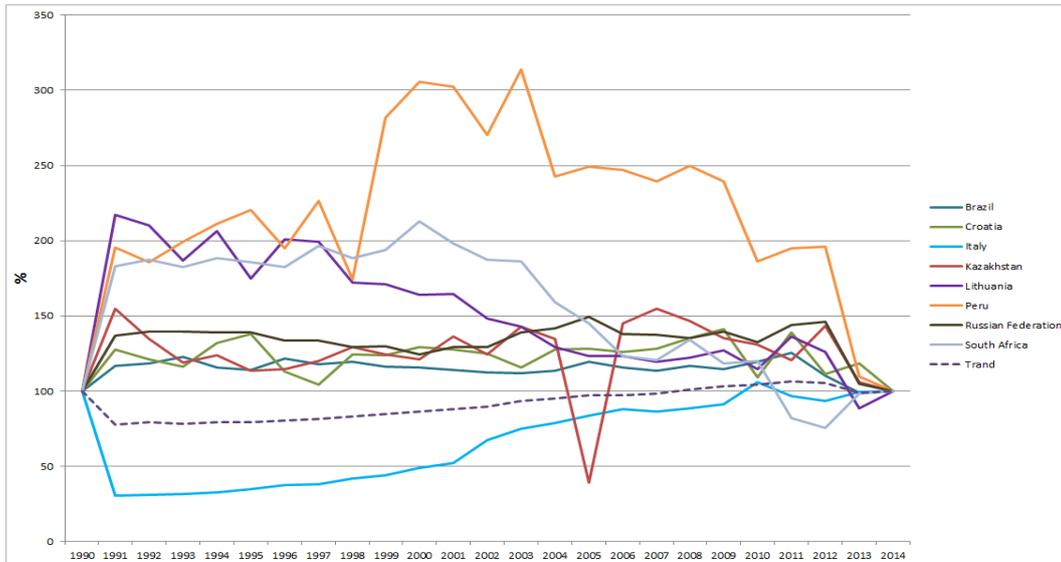


Figure 2. The evolution of deaths by duodenal or gastric ulcer in countries that don't respect the trend

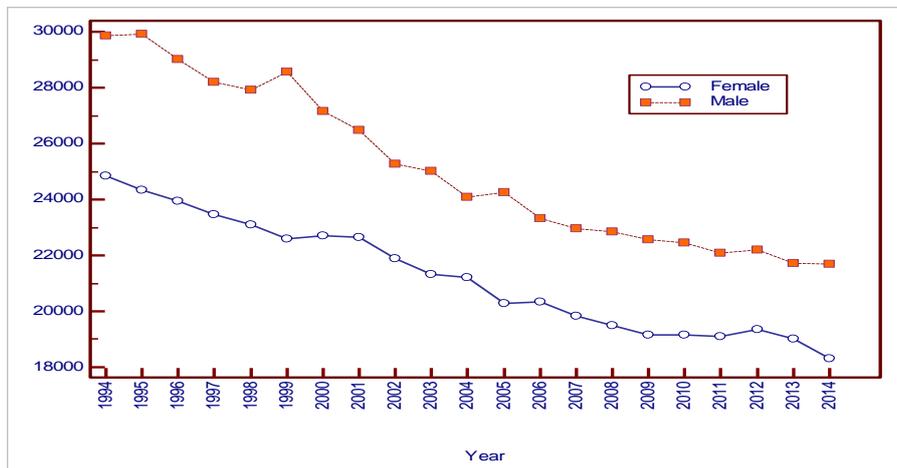


Figure 3. The distribution of deaths by gender

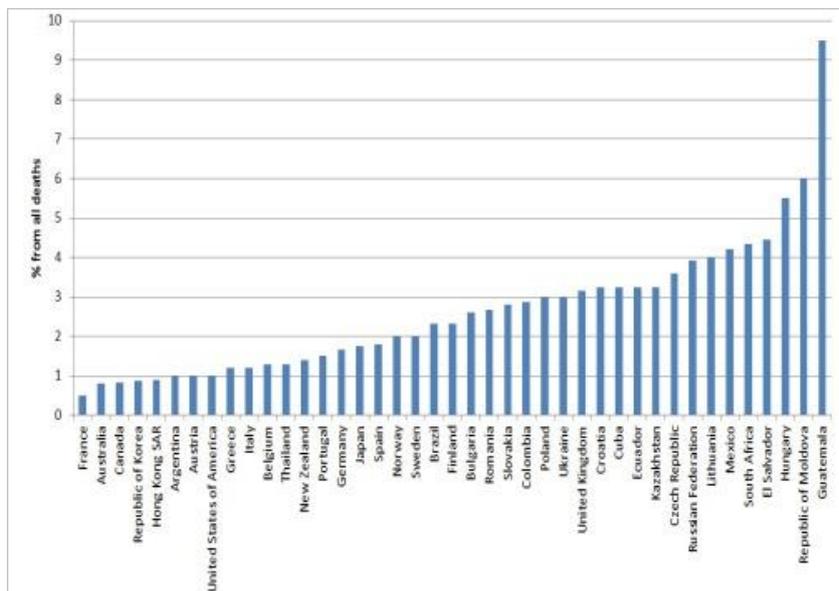


Figure 4. The average number of deaths by duodenal or gastric ulcer per 100.000

Discussions

Gastric cancer is one of the leading causes of global cancer mortality and in Romania, it represents the third cause of cancer death in men and the fifth in women. Developing effective anti-cancer therapies requires a deep understanding of the mechanisms underlying tumor progression and drug resistance (DRAGU [5]). Acute upper gastrointestinal bleeding used to be a big problem for the surgical team, but thanks to recent advances in its management it has become the most common gastroenterological emergency (BOTIANU [6]). Even though results are promising and morbidity and mortality levels from peptic disease are indeed on a descending path, the new times that we are living in have brought new problems that influence the pathology and thus its management. One of these factors is the change on an epidemiological level. Peptic ulcer disease used to be mainly driven by *H. pylori*. Nowadays, old patients who suffer from peptic ulcers disease have more comorbidities and are harder to manage, thus they may experience worse outcomes than younger ones. Secondly, the new drugs and techniques are not widely available in all areas of the world, so there are patients who suffer from peptic ulcer disease who face barriers to access a specialist on time and may face harsh consequences (HREINSSON [7]).

Conclusions

In conclusion, most countries have benefited from the addition of new non-surgical treatment methods in what concerns the management of gastric and duodenal ulcers. However, there were some exceptions to the rule. The overall trend in mortality is a descending one, so these methods should be further studied and implemented as great resources in the future. The countries which could benefit most from them are the ones where surgical methods are harder to implement.

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