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ARS Medica Tomitana - 2022; 1(28): pag. 37 - 40
doi: 10.2478/arsm-2022-0009

ABOUT BOTULISM IN ROMANIA

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ABSTRACT

Each year, in many parts of the world, foodborne disease represents a significant cause of hospitalization. According to World Health Organization, foodborne botulism is a potentially fatal disease caused by a variety of foods, contaminated with different neurotoxins related to Clostridium botulinum. In Romania foodborne botulism appears every year with many cases compared to other European countries. Because botulism is caused by the most toxic natural substances known, every case is a public health emergency and every suspected case must be reported. In this study we wanted to evaluate the particularities of botulism cases in Romania.

Keywords: health, toxin, botulism

Introduction

Each year, in many parts of the world, foodborne disease represents a significant cause of hospitalization. Different parasites, viruses, bacteria or toxins can cause foodborne illness (1, 2).

Botulism is a rare illness caused by the toxin of the Clostridia species. Foodborne botulism is the dominating form for this disease. There are seven types of toxin but only types A, B, E and F cause human botulism (3-5).

The food sources are lightly preserved foods and inadequately processed products, such as fish, fish eggs, meat products, low-acid preserved vegetables, cheese (4).

Because it is a paralytic illness (with descending, flaccid paralysis) botulism is a mandatory notifiable disease and a public health emergency (4, 5). So, prevention by good practice in food preparation is very important. Moreover, a prompt diagnosis is essential to prevent death.

In this study we wanted to evaluate the particularities of botulism cases in Romania.

Material and methods

For the study, data was taken from reports of the Public Health Department-Constanta and from the Institute of Public Health Bucharest.

For descriptive analysis of data, we have used statistical quantitative methods.

The study period was: 2008-2021.

Results

In all this time, 2008-2021, 311 cases of foodborne botulism were registered in Romania. The proportion of cases varies between 2.57 and 11.9%, with a maximum in 2009 and a minimum of cases in 2021 (igure 1).

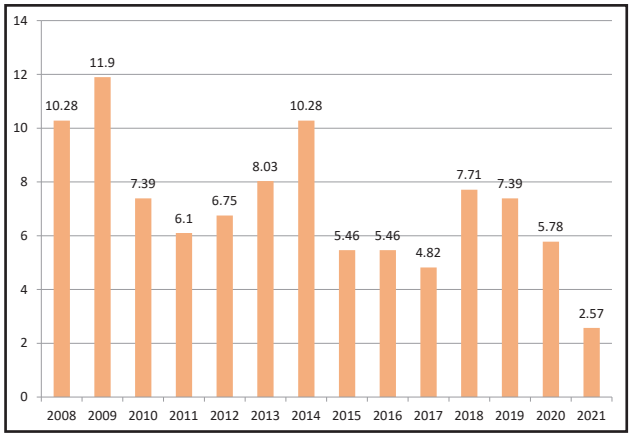


Figure 1 - The proportion of cases by years

The incidence rate of botulism cases in Romania fluctuated between 0.003%000 and 0.17%000 (per 100000 persons) during 2008-2021 (6, 7). The highest values of the incidence were in the years: 2008, 2009 and 2014 with a maximum of 0.17%000 in 2009.

In figure 2, the incidence of botulism cases in Romania shows a decreasing trend for our study period. The same trend was also before, in 1998-2008.

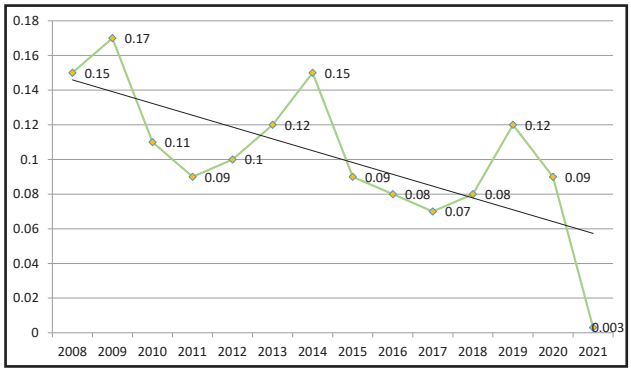


Figure 2 - The incidence rate of botulism in Romania per 100000 persons

The figure nr 3 presents the distribution of botulism cases in Romanian Counties, using data from National Center for Surveillance and Control of Communicable Diseases Bucharest.

Most cases were registered in Bihor, Satu-Mare, Arad and Ilfov (7). However, considerable values were also found in Salaj and Iasi. For other counties the proportion was less than 3%, and sometimes less than 1%.

While analyzing all 14 years of study we didn't find a seasonality of cases, only random peaks. The situation is similar with the statistics at the European level (the source is European Centre for Disease Prevention and Control).

While studying the distribution of cases between rural and urban areas, we found data for most of the years. This analysis concluded that a higher proportion of cases appears in rural areas and only in 2010 and 2018 more cases were recorded in urban regions.

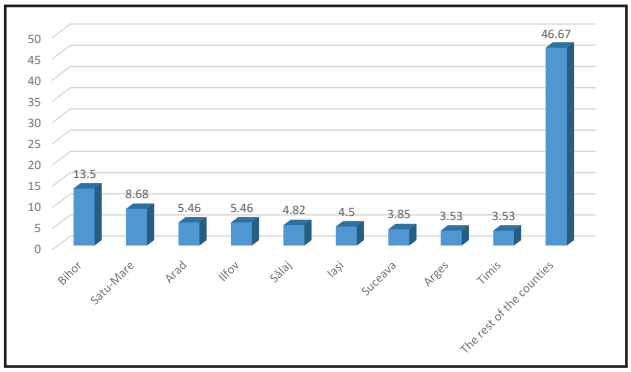


Figure 3 - The proportion of cases by counties

The National Center for Surveillance and Control of Communicable Diseases from Bucharest uses four categories of age groups for reporting data about botulism: 0-4 years, 5-14 years, 15-64 years, 65 years and over.

The age group 15-64 years is very large, but this is the system for data report in Romania. For this reason, three quarters of the cases (3/4 of the cases) occur in this age group. Moreover, in Romania, and also in other European countries, the distribution of cases was higher in younger adults (< 30 years).

Zero cases were reported in the 0-4 age group, but the situation is different for other countries. In the rest of Europe, the Annual Epidemiological Reports of European Centre for Disease Prevention and Control show that foodborne botulism were detected in 0-4-year-

old children.

The diagnosis was established based on clinical and epidemiological criteria for 28 botulism cases, and for the rest of 283 cases, the diagnosis was confirmed by serological analysis (7).

In clinical and epidemiological diagnosis (not laboratory-confirmed) the case is called probable foodborne botulism (for this study 9% of all cases - figure 4).

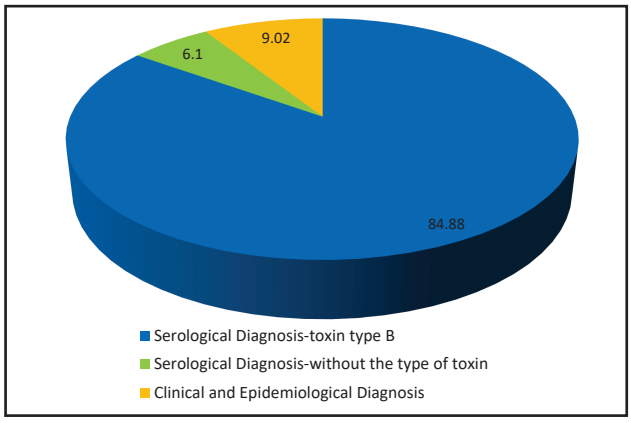


Figure 4 - The proportion of cases by the type of diagnosis

More than 90% of all cases of botulism have a serological confirmation by specific analysis performed in public-health laboratories (figure 4).

Analyzing the situation for every year, we find that only in 2014 and 2015 the presence of the toxin was confirmed for all cases of botulism. For the rest of years, the proportion of positive serological diagnosis was higher than 60%.

From 283 cases with serological diagnosis, 264 (84.88% of total botulism cases) were confirmed with botulinum toxin type B. For the rest of 19 cases (6.10% of total botulism cases), there was not enough blood to determine exactly the toxin type.

In more than 55% of cases, the foods that caused the disease were from the patient's household (home-processed foods). For the rest of cases, commercial products have been implicated or the food source could not be identified.

Among the food categories, meat was most often involved in the onset of the disease.

It is important to note that patients exposed to the same contaminated food may have very different signs and symptoms for this neuroparalytic disease. Also, epidemiological investigation is urgent to prevent further cases from occurring.

Furthermore, foodborne botulism can be fatal in 5-10% of cases (4). For our study, death was reported only in 2019 and 2020 (0.64% of cases).

Discussions

Botulism is in the category of mandatory notifiable disease all over the world.

In Europe the incidence rate of botulism oscillated between 0.01-0.03 per 100000 individuals (0.01-0.03 %000), also with a decreasing trend in 2008-2021 (8).

For Europe, botulism occurs sporadically, but in Romania botulism, and more exactly foodborne botulism appears every year with many cases compared to other European countries.

Regarding the incidence rate of botulism, Romania has often been on the first or second place in Europe.

Conclusions

The results of this study prove that, in Romania, foodborne botulism is still an important problem.

Because botulism is caused by the most toxic substances known, every case is a public health emergency and every suspected case must be reported. All the instructions about preserving, storing or preparing food should be followed to ensure the food safety.

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