

DISTRIBUTION OF THE CASES OF FOODPOISONING WITH STAPHYLOCOCCUS AUREUS REPORTED TO AGE AND PROVENIENCE MEDIUM

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Abstract

The Staphylococcus type is part of the Staphylococcaceae family that includes five types. It included 40 species among which 16 are considered as being food pathogen. Generally the staphylococci are found in food of animal origin, not treated thermally, manipulated directly by people. There are many studies in which is showed that the staphylococci are found in a great number in the food sold. The food most frequently incriminated are the dairies, meat, eggs, fish, pastry, mayonnaise. Although the production of enterotoxins is considered generally as being associated with the strains of Stp. aureus coagulase and thermo nuclease positive, many of the species of staphylococci, that don't produce either of these enzymes produce enterotoxins.

Stp. aureus is a mesophyll germ, but some strains can be multiplied also at temperatures of only 6, 7°C. The researchers have discovered in the budding (eggs, milk) three strains of staphylococci, that increased to 45,6°C, diminishing their growth during the incubation at 46,7°C-48,9°C. Some strains of staphylococci were multiplied at the temperature of 44,4°C in the chicken à la king, but did not grow in the ham salad, at the same temperature.

Generally the multiplication takes place between 7 and 47,8°C, and the production of enterotoxins, between 10-46°C, with an optimum between 40 and 45°C.

Regarding the aw, the staphylococci are unique, by the fact that they have the capacity to multiply at the lower values, compared to non halophile bacteria.

Keywords: staphylococci, thermal, food

INTRODUCTION

The food poisoning with staphylococcus is owed to the ingestion of thermo resistant enterotoxin, it resists 30 minutes at 100°C, elaborated in the food of enterotoxigenic strains of Staphylococcus Aureus.

It is sufficient a very small quantity of enterotoxin to set off symptoms. The source of Staphylococcus is represented by the man and the animal with mastitis and furunculosis. The most frequently incriminated food is: the dairies, meat, eggs, fish, pastry, mayonnaise. The beginning is sudden after a latence of 1-6 hours, without fever, with abdominal cramps, vomits, watery diarrhea.

The recovery is spontaneous and complete in 1-2 days by the elimination of the toxin from the body.

The coagulate-negative staphylococci are pathogen opportunist, nature that appeared in the last decades, following the using on a large scale of a larger and larger number of invasive medical procedures.

Some strains of coagulate-negative staphylococci have the capacity to form a biofilm on the electronegative surface of the foreign bodies, factors of pathogenicity that favor the development of the infection with these microorganisms.

The product to be examined varies in relation with the clinical syndrome: matter, spiting, fecal matters, food samples, blood, urine.

From the non contaminated samples is are performed colored smears Gram and examined at the optical microscope.

The isolation of the staphylococcus is made on blood-agar or on the hypochlorite medium for the products intensely contaminated.

At the basis of the identification of the isolates are the morpho tintorial nature, of culture, of the catalysis tissue and of the coagulase.

For epidemiologic investigations is necessary the performance of identification and classification of the bacteria.

MATERIAL AND METHODS

We accomplished a retrospective, prospective study, on a number of 140 patients diagnosed with food poisoning, admitted on the ward of gastroenterology of the County emergency hospital, Oradea.

The period for which was extended the study is of 5 years, included in the period 01.01.2011-31.12.2015.

For the performance of the study was used the archive of the County emergency hospital, Oradea, the computerized data base of the unit, respectively.

The representation of the results was performed with the help of the graphics, tables and laboratory determinations.

RESULTS AND DISCUSSIONS.

Table 1.

Distribution of the cases depending on the age.

Groups of age	Women		Men	
	No.	%	No.	%
<20	3	4	1	2
21-30	8	11	3	6

31-40	13	19	9	18
41-50	7	10	6	12
51-60	6	9	6	12
61-70	18	26	11	23
>70	15	21	13	27

The majority of the patients had age between 31-70 (25%, respectively 30%), being non significantly greater for women than for men (66% for women, respectively 34% for men).

Table 2

Distribution of the cases depending on the medium

Medium	Food poisoning with <i>Staphylococcus Aureus</i>	
	Nr.	%
Urban	81	54
Rural	68	46

In our batch of study have predominated the patients from the urban medium (54%).

Between the years 2011-2015 were hospitalized 117680 ill persons with food poisoning with *Staphylococcus Aureus* admitted at the County emergency hospital, Oradea on the gastroenterology ward.

In the study performed in England, between the years 1958-1967 were identified 407 cases of epidemic focuses in the hospitals, and on planes, during the intercontinental voyages, after the food served on the plane.

During the year 2012, were reported to the National center of surveillance and control of the transmissible diseases a number of 79 focuses of food poisoning, of which 31(39,24%) collective focuses and 48(60,75%) family focuses with a total of 678 cases, 401 admitted. Among the collective focuses were confirmed 5(6,32%), 2 with *Staphylococcus*, 2 with *Salmonella* and one with non-enteropathogen *E. Coli* on May. The most significant focus was around a restaurant from Eforie Sud, Constanta

county with 50 cases of 200 consumers. It is possible that an employee, ill or healthy bearer to have represented the source of infection.

In 2013, were reported 105 focuses of food poisoning, of which 48(47,7%) collective focuses and 57(52,3%) family focuses, with 5.772 consumers, 1.167 ill persons and 816 admitted. Most of the focuses were reported from the counties Constanta, Bihor, Neamt and Suceava. Of the total of reported focuses, 10,47% were confirmed, 40% were classified as probable, 45,71% infirmed, and 3,8% were not investigated. The majority were reported in the hot season, in the period May-September, their appearance being associated with the consumption of food prepared and kept in the non corresponding conditions. In the cases when the source could be identified the incriminated food was – milk, dairy products (ewe cheese, telemea cheese, sour cream green chees, hard cheese), eggs and products of eggs (mayonnaise, cake cream), meat and products of chicken. At only 11 focuses was isolated the same pathogen agent in the harvested samples from the food and in those harvested from the patients. Were confirmed 5 focuses with *Staphylococcus*, 5 with *Salmonella* and one with *E. Coli*.

From the study that we enterprise in the County emergency hospital, Oradea from the point of view of the provenience medium, we observed that the majority of the patients that had food poisoning come from the urban medium (54%).

CONCLUSIONS.

The correlation between the incidence of the illness and the medium of provenience urban/rural is not significant.

The presence of the food poisoning present at women, is not justified, the report between the two sexes being 1,4♂:1♀.

The majority of cases of food poisoning with *Staphylococcus Aureus* were present at the group of age 31-70, for women and men.

Depending on the distribution on months of the cases with food poisoning having as pathogen agent *Staphylococcus Aureus*, we observed that the summer is the season with the most of the cases, their appearance being associated with the consumption of food products and kept in non fit conditions.

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