ALIMENTARY PRODUCTS CONTAMINATED WITH STAPHYLOCOCCUS AUREUS REPORTED TO THE NUMBER OF CASES

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Abstract

The food poisoning appears due to a pathogen agent swallowed or by its preformed toxins. With the exception of the botulin toxins, amino toxins and toxins of the phytoplankton, almost all the pathogen agents mentioned can be received on the fecal oral way.

Their spreading is made either by the operators from the alimentary industry, or by vectors, or by the elements included in the food, as is the contaminated water. The staphylococci produce non-diffusible pigment, that colors only the bacterial colony but not also the culture medium, of golden yellow color. The pigment genesis is more intense at the room temperature and in the presence of the oxygen. On the mediums with blood appears beta hemolysis.

The staphylococci are resistant to the conditions of external medium. They resist in cultures at the refrigerator for some months, in dry fastering 2-3 months. They are relatively resistant to antiseptic and disinfectants and the gamma radiations, at the action of colorants. They can be destroyed in 60 minutes at the temperature of 60°C, are sensitive to bacteriophages, to UV radiations.

The following products have bacteriostatic effect on the staphylococcus strains: lemon, pineapple, apple, apricot, peaches juice, chocolate, cocoa.

The staphylococci are especially resistant to antibiotics. Over 95% of the staphylococci are resistant to penicillin. The staphylococci sterns resistant to methicillin are poli resistant strains exteriorizing the concomitant resistance toward cephalosporin, erythromycin, clindamycin.

Keywords*:* food poisoning, toxins, contaminated

INTRODUCTION

Generally the pathogen bacteria Gram positive produce extracellular substances responsible for the majority of the virulence factors (for example *Staphylococcus Aureus*.

Stp. aureus was the first bacteria isolated from food whom it was established the method of pathogenicity. It was studied for the first time by Denys in 1894 and then by Barder in 1914 by the reproducing of the symptoms of the alimentary infection produced by staphylococci on himself. Deck, in 1930 has reproduced the disease on volunteer graduate students, who consumed food inoculated with a filtrate of culture of *Staphylococcus Aureus*.

The *Staphylococcus Aureus* colonizes the nostrils and the colon from where they can contaminate the tegument. The material support of the transmission is represented by soil, sand, furniture, carpets, dust and air from the rooms.The staphylococci produce non-diffusible pigment, that colors only the bacterial colony but not also the culture medium, of golden yellow color. The pigment genesis is more intense at the room temperature and in the presence of the oxygen. On the mediums with blood appears beta hemolysis.

The mechanisms of virulence of the bacteria Gram negative are much more complex and various compared to those of the bacteria Gram positive.

The staphylococci gastroenteritis is caused by the ingestion of some food, that contain one or more enterotoxins, produced only by some staphylococci species and strains.

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.

MATERIAL AND METHODS

- For the accomplishing of the objectives proposed was used the retrospective study.
- The reaction of the study was extended to 5 years (01.01.2008-31.12.2012).
- The material basis of the study included the observation sheets of the patients, submitted at the archive of the hospitals, the computerized data of the two units, respectively.
- The data obtained were interpreted statistically based on the determination and calculation of some series of indices.

- The representation of the results was performed with the help of graphics and tables.

RESULTS AND DISCUSSIONS.

Table no.1.

The alimentary products contaminated with *Staphylococcus Aureus*/no.of cases

Alimentary products	Food poisoning with Saphylococcus Aureus	
	No.	**%**
Milk	50	34
Sour cream	21	14
Telemea cheese	18	12
Eggs	14	9
Mayonnaise	29	20
Cake cream	17	11
Total	149	100

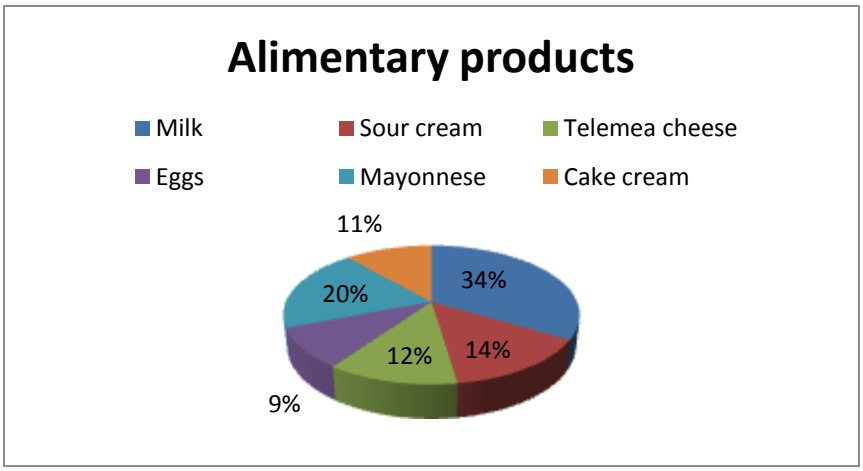

Fig. no. 1. ***The alimentary products contaminated with Staphylococcus Aureus/no. of cases***

The incidence of the staphylococci in the food to which was not applied thermal treatment is very large. Usually the old food is represented by the products incorrectly refrigerated after the preparing.

Were made recent evaluation that place the number of cases of gastroenteritis transmitted by staphylococci between 1 million and 2 millions per year, in USA.

One of the greatest epidermics ever reported took place in June-July 2000, in the district of Kansai, in Japan. There were 13.420 victims, and the food considered the main reason was the sour cream milk and powdered with sugar from a single source. The etiological agent was represented by a strain of *Staphylococcus Aureus* producing enterotoxins. The symptoms appeared on 83,4% of the victims interviewed for a period of 6 hours. The vomits were reported in 73,3% of the cases and the diarrhea in 75,9% of the victims.

In the period of 1981-1995, in South Korea were registered 64 epidemics of alimentary intoxications with staphylococci, with 2490 of cases, representing 16,5% of the total alimentary epidemics from this period.

In Japan 9,9% of all the cases of food poisoning and 15,9% of epidemics had a staphylococcus origin. Between 1980-1999, in Japan were reported 2.525 epidemics with staphylococci with 59.964 illnesses and 3 deaths.

The main aliments that served as reason were the rice and the bean pods.

The problem that is put is a problem of reporting, because, frequently, the small epidemics from the houses of the population are not reported to

the authorities of public health. A great percentage of cases, reported, from all the types are represented by events, to which participates a great number of persons.

An unusual epidemics, caused by enterotoxins, was due to the consumption of wild mushrooms in vinegar.

In the personal analyses of the statistic data registered at the County Emergency Hospital Oradea it is obvious that among the contaminated alimentary products the main is the milk with 50(34%), followed by mayonnaise 29(20%) and sour cream with 21 cases (14%).

CONCLUSIONS.

When in the susceptible aliments is found a reduced number of staphylococci, they will remain untouched by enterotoxins and of other risks of food poisoning, if they are kept at/under 4,4°C or over 60°C, until they are consumed.

Following the studies made, was observed that among the factors that contributed to the production of food poisoning the most frequently were involved the following five factors:

1. incorrect refrigeration;
2. preparing the aliments a long time before their planned serving;
3. incorrect personal hygiene (non satisfying); persons infected that manipulates the aliments;
4. the boiling or thermal processing, insufficient;
5. the maintaining of the food in heating devices, at the temperature of bacterial growth.

The five factors presented have contributed to the producing of 68% of the epidemics.

The susceptible aliments don't have to be kept at the limit of staphylococci growth, more than 3-4 hours.

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