ENVIRONMENTAL INFLUENCE ON SOME TOXIC INFECTIONS BURST

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Abstract. Alimentary toxic infection (ATI) are acute diseases with digestive manifestation in the large majority of cases as a result of consume of contaminated food with some microbial species and/or their toxins.

This paper is a study elaborated by taking in observation a number of 780 cases with diagnostic alimentary toxic infection at The Clinic Hospital “Victor Babeș”, Craiova – Infectious Diseases Clinic, during 01.01.2002 – 31.12.2005 as well as a study witch analysis the daily consume of additives enhanced foods by students and pupils. A quantitative and qualitative retrospective and prospective analyses of these patients was undertaken using the clinical observation papers as databases, the hospitalization register and a research study on a group of 32 students from the first year in Faculty of Medicine and Pharmacies, Craiova. All gathered data were statistical interpreted. The following conclusions were obtained: ATI are diseases witch sporadically or epidemical emerge after the consumption of contaminated aliments with some bacteria and their toxins; because it is almost impossible to avoid the consumption of products witch contain alimentary additives, there is necessary to update the Romanian laws, accordingly with the OMS standards; there must be take into account the current standards regarding the content and quantity of additives, and their keeping must be verified by the responsible organisms.

INTRODUCTION

Periodically we are under alert because of a new alimentary disease namely the alimentary toxic infection, a direct consequence of alimentary products witch present a risk for the health. Although, the alimentary risk are less numerous then in past times.

Alimentary security of aliments must be a major problem of lucidity and responsibility. In order to regain the consummators thrust, there must be identified and classified the risks, each of the key factors in the alimentary chain becoming fully responsible of its own contribution to the public health impact.

The major risks are currently regarded of having animal food source. The germs implied in ATI are in their great majority of multiple microbial species origin, as are: Salmonella, Shigella, Escherichia, Proteus etc. The disease manifests itself because of the over uncontrolled multiplication in aliments and also as a consequence of the toxins they liberate. The toxic infections are morbid states and they appear due to toxic chemical substances witch forms in the body of food or in the human body. In risk assessment, control institutions have limited power, almost the full responsibility for health quality being in the production field and also to the blame is on the producing sector and into the distribution areas. The products and the fabrication ways are a two level check-up system: the first one is the self control mechanism of the producer or processor and the second one is the state.
The self check up point is based on the HACCP (Hazard, Analysis Critical Control Point)

MATERIAL AND METHOD

This present paper has in it’s attention a number of 780 people witch had the toxic infection diagnosis, all of them being clinically investigated in Infection Diseases Clinic of the Hospital “Victor Babeș”, Craiova, between 01.01.2002 – 31.12.2005.

A complex study, reaching quantitative and qualitative as well as retrospective and prospective aspects of this investigated people was undertaken and the main attention data base on the current research is being constituted by the clinical observations papers as well as the hospitalization register. All data were graphically portrayed.

We have studied each patient’s disease etiology. In order to simplify the risk factors and find an appropriate environment causes on ATI, the cases were structured in larger ATI etiology categories.

There were 4 case groups:

- A: *Salmonella* 151 cases,
- B: *Streptococcus faecalis* 76 cases,
- C: *Staphylococcus enterotoxic* or *Clostridium botulinum* - 283 cases,
- D: bacteria etiology but without knowing the source of ATI – 270 cases.

On each group we draw the next variables: patient’s age and sex; origin and professional environment.

We have also studied the daily usage of chemically enhanced foods by both pupils and students.

This study has been effectuated on a group of 32 students, all of them enlisted in the first year at The Medicine and Pharmacy Faculty of Craiova. The data gathering has been undertaken by using 6 questions with several answer choices.

1. Which are the foods that you eat on a daily bases?
   a) Fast foods; b) Cacao or chocolate based products; c) Eggs or eggs based products; d) Milk or milk based products; e) Bread or bread based products.

2. Witch is your favorite drinks?
   a) Alcoholic ones; b) Fruit juices, nectar, tea; c) Plant based products, fruits and cereals; d) Water with sugar ; e) Milk.

3. Witch is the alimentary additives:
   a) Substances that are used on regular bases in alimentary products; b) Chemical products; c) Conservants, acidifiants, colorants, sugar like substances, gelatins; d) I don’t know.

4. Do you read the products label on regular bases?
   a) Yes; b) No.

5. Do you know what the admitted alimentay additives are?
   a) Yes; b) No.

6. Do you know which are the most dangerous alimentary additives presents in the alimentary products?
   a) Yes; b) No.

RESULTS AND DISCUSSIONS

In Infections Diseases Clinic of “Victor Babeș” Hospital of Craiova, between 01.01.2002 – 31.12.2005 were interned 44.053 patients.
Among these 780 hospitalized people had the ATI diagnostic being 1.77% of all hospitalization (Graphic nr. 1).

<table>
<thead>
<tr>
<th>Nr. of cases</th>
<th>Hospitalized people</th>
<th>ATI people</th>
</tr>
</thead>
<tbody>
<tr>
<td>780</td>
<td>44.053</td>
<td>0</td>
</tr>
<tr>
<td>10.000</td>
<td>20.000</td>
<td>30.000</td>
</tr>
<tr>
<td>40.000</td>
<td>50.000</td>
<td></td>
</tr>
</tbody>
</table>

Graphic nr. 1: The incidence of ATI

The obtained results which followed the study are structured as it follows:

Group A: *Salmonella infected people* (Graphic nr. 2 and 3).

Graph nr. 2: The repartition of group A by age

Regarding the group A age reparation, we notice:

- A higher frequency among the young people with ages between 0-14 peaking in the first life year (24.49%), and a second peak between 15-24 years old (17.69%);
- A higher then normal frequency can be found also at mature peoples with ages between 35-44 and 45-54 years old (8.84%-8.16%).

Graph nr. 3: The distribution of group A by socio professionale structure

Analyzing the socio professional structure form group A we have noticed the higher frequency among the pupils and students (32.62%) as well as farmers (27.17%).

Group B: Hospitalized people with bacterial intestinal infections, that is *Streptococcus faecalis*. (Graphic nr. 4 and 5).
A large number of cases can be found among 5 and 4 age (22 cases representing 28.95%), as well as a lesser number of cases among 75 years hospitalized people (2 cases, meaning 2.63%).

Analyzing the socio professional structure of group B we have seen a higher frequency on unemployed hospitalized persons 49.12%, as well as pupils- students 31.58%.

Group C: Bacteria alimentary intoxicated people – as it is enterotoxic staphylococci or Clostridium botulinum (Graphic nr. 6 and 7).

The age repartition on large scale number of cases showed up that a higher number are being centered around 5 and 14 years old people (25.8%), as well as 35 and 44 ages (14.84%).
By taking into account the socio professional structure we have noticed a higher percentage among agriculture field workers (35.66%), as well as young people like students and pupils (23.64%) and among the unemployed (23.64%), the last two categories being in equality to each other.

Group D: ATI cases but with unknown bacteria source (Graphic nr. 8 and 9).

In a number of 270 ATI diagnosed cases with bacteria etiology, the causing agent that is the bacteria could not be identified with the existing methods found in the hospital at that date.

Graphic nr. 8: The repartition of group D by age

A higher incidence can be found among 45 and 74 years old hospitalized people (22.22%; 15.19%; 21.11%). Among 0-1 years as well as between 1-4 years it could not be found any ATI cases with this particular unknown bacteria etiology.

Graphic nr. 9: The distribution of group D by socio professionale structure

By studying the group D distribution regarding the social and professional position of it’s members we reached the conclusion that there is a higher frequency between the workers class (31.09%), and also between the unemployed (29.21%) and the agricultural engaged people (25.09%). The alimentary toxic infection gets its name of the both toxic and infectious components that are distributed among these diseases.

ATI occasionally appear when one person has consumed a contaminated aliment, but more often take the shape of epidemic focus in families or entire communities witch have consumed the same product. In the past decades, epidemic ATI diseases have continuously risen in the great majority of the countries in the world. The fact that the diseases does not spread itself practically from one man to another directly lead us to conclude that only the consumption of the same product can deliver the disease over so many separate cases. The easiest contaminated aliments are: meat and the other products by meat (like conserves, etc.), fish, milk, products by milk (cheese, etc.), powder milk, eggs (especially duck eggs witch may reach at 19% salmonella infestation), eggs powder (21-31%).

The ATI etiologic diagnosis was established in 65.38% of cases, the rest of 34.62% being unclear.
In our study, made at Infection Diseases Clinic of the Hospital “Victor Babeș”, Craiova, because students and pupils are a representative group and we analyzed if they know how to consume healthy food (87.5% from students consume fast food products (daily) and 12.5% bread and panificaţie products).

It is well known that fast food products contain a big number of permitted alimentary additives such as: E260, E261, E281, E283, E471, E473, E321,E349, E352, E160, E309, E214, E219, et al., but we have to mention that a big part of this products are not having an envelope were we can read all the ingredients. In this way the producer can use also unpermitted alimentary additives. In this case, 93.75% from our students don’t know what alimentary additives are, 90.63% are not used to read the ingredients of the products, they don’t know witch are the admitted alimentary additives and witch one are most dangerous.

CONCLUSIONS

• ATI are diseases witch can appear sporadically or epidemically following the consumption of high contaminated aliments with varied bacteria and their toxins.
• ATI makes 1.77% of the number of all hospitalization in Infectious Disease Clinic during the researched period.
• The usual casualties are young children and aged people, raging from 0-14 and over 75).
• ATI usually brocks out in low level social and economical status people, witch ever the provenience environment.
• Human carriers that have pathogen germs and work into the alimentary field are pulled out temporary and treated until they are germ clear.
• The population protection can be done effectively only by a sufficient and accurate education in this sanitary area.
• To avoid alimentary additives is close to impossible, that’s why it is necessary to update the Romanian legislation according to OMS standards.
• The standards that are already in use must be strictly respected especially regarding the aspects related to the quantity and the dosage of the chemical substances employed in food producing and the authorities must make sure of this.

BIBLIOGRAPHY