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EPIDEMIOLOGICAL DATA FOR LISTERIOSIS IN GREECE

2004-2017

(MANDATORY NOTIFICATION SYSTEM)

Key points

- The notification rate of listeriosis in Greece is low.
- Based on the data for the period 2004-2017:
 - The disease was more frequent in the age group ≥ 65 years old.
 - More than 50% of the notified cases were immunocompromised patients.
 - The case fatality rate was 20.8%.
 - During 2015-2017, an increased number of listeriosis cases was observed.

Listeriosis is a foodborne disease caused by *Listeria monocytogenes*. The case fatality rate of listeriosis is high compared to other foodborne diseases. It mainly affects pregnant women, newborns, the elderly and immunocompromised adults [1]. *Listeria* usually causes sporadic cases, however in recent years large outbreaks of listeriosis have been identified [2-6].

Time trend

In total, 158 cases of listeriosis were reported in Greece from 2004 to 2017. The mean annual number of cases was 11.3 (standard deviation: 8.35) and the mean annual notification rate was 1.03 cases per 1,000,000 population. During 2015-2017, an increased number of listeriosis cases were observed (3.04, 1.85 and 1.95 cases/1,000,000 population for the years 2015, 2016 and 2017, respectively). The number of notified cases and notification rates for the years 2004-2017 are presented in **Table 1**. The incidence of listeriosis by year is depicted in **Graph 1**.

Age and gender distribution

For the period 2004-2017, the highest mean annual notification rate of the disease regarded the age group of ≥ 65 years old (3.4/1,000,000 population) followed by the age group of 0-4 years old (1.4/1,000,000 population). During the same period, the mean annual notification rate was 1.19 cases/1,000,000 population for males and 0.88/1,000,000 population for females. The incidence of the disease by gender and age group (0-4, 5-14, 15-24, 25-44, 45-64, 65+ years) is depicted in **Graph 2**.

Seasonality

The mean monthly notification rate of the disease for 2004-2017 was increased during spring, with a peak in March and gradually was decreased in the following months presenting a second peak in August (**Graph 3**).

Geographical distribution

The geographical region of Attica had the highest mean annual notification rate for 2004-2017 (1.58/1,000,000 population), Aegean islands/Crete (0.80/1,000,000 population), Central Greece (0.77/1,000,000 population) and Northern Greece (0.55/1,000,000 population) had the lowest.

Risk factors/Outcome

Eighty-two (51.9%) of the total listeriosis cases, were immunocompromised patients, 6 (3.8%) pregnant women and 4 (2.5%) newborns. Among cases with known outcome (n=144), 33 (22.8%) deaths were recorded.

Increase of notified cases of listeriosis, 2015-2017

During 2015-2017, 33, 20 and 21 cases of listeriosis were reported through the mandatory notification system, indicating an increase of the notification rate. It should be noted that there were no major changes at the mandatory notification system. In the same period the distribution of listeriosis cases by age and gender did not differ from previous years.

For 2017, from the 21 reported cases, two regarded a pregnant woman and one case was a newborn. Concerning the case fatality, 5 cases from the 16 – for which the information was available – died (31.3%).

Taking into account the geographical distribution of listeriosis cases and the distribution by time, the reported cases did not seem to be associated to a single source.

Conclusion

The notification rate of listeriosis is low in Greece. The mean notification rate in the EU and EEA/EFTA countries was 4.7 cases per 1,000,000 population for the year 2016 [7]. When interpreting this difference, the surveillance systems' probable under-reporting should be taken into account. The age distribution, the high percentage of immunocompromised people among cases, and the high case fatality are findings compatible with those of other European countries [7]. Finally, a seasonal pattern has also been documented in other European countries with an increased number of notified cases usually between May and September [7].

The reasons that led to the increase of the reported cases of listeriosis in 2015, 2016 and 2017 have been further investigated.

The observed increase has reinforced the collaboration of the involved public health authorities. The aim of the collaboration is the timely detection of cases/outbreaks of listeriosis and the protection of the immunocompromised population and pregnant women by taking the appropriate public health measures.

References

[1] Heymann D, MD. Control of Communicable Diseases Manual. 20th Edition, 2015, American Public Health Association.

[2] Centers for Disease Control and Prevention (CDC). Vital signs: Listeria illnesses, deaths, and outbreaks--United States, 2009-2011. MMWR Morb Mortal Wkly Rep 2013 7;62(22):448-52.

[3] Rietberg K, Lloyd J, Melius B, Wyman P, Treadwell R, Olson G, Kang MG, Duchin JS. Outbreak of Listeria monocytogenes infections linked to a pasteurized ice cream product served to hospitalized patients. Epidemiol Infect. 2016;144(13):2728-31.

[4] Self JL, Conrad A, Stroika S, Jackson A, Burnworth L, Beal J, Wellman A, Jackson KA, Bidol S, Gerhardt T, Hamel M, Franklin K, Kopko C, Kirsch P, Wise ME, Basler C. Notes from the Field: Outbreak of Listeriosis Associated with Consumption of Packaged Salad - United States and Canada, 2015-2016. MMWR Morb Mortal Wkly Rep. 2016 26;65(33):879-81.

[5] Awofisayo-Okuyelu A, Arunachalam N, Dallman T, Grant KA, Aird H, McLauchlin J, Painset A, Amar C. An Outbreak of Human Listeriosis in England between 2010 and 2012 Associated with the Consumption of Pork Pies. J Food Prot. 2016;79(5):732-40.

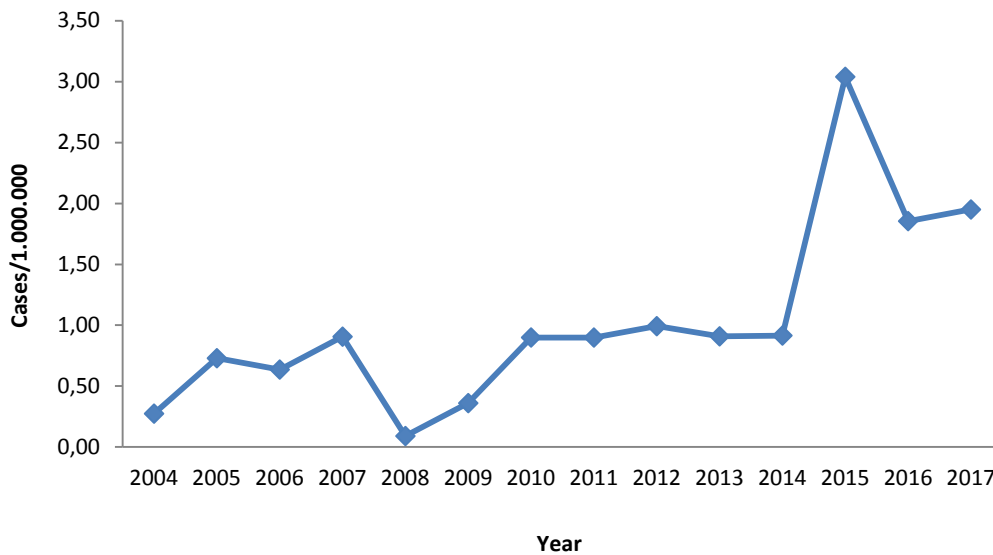
[6] Marini E, Magi G, Vincenzi C, Manso E, Facinelli B. Ongoing outbreak of invasive listeriosis due to serotype 1/2a *Listeria monocytogenes*, Ancona province, Italy, January 2015 to February 2016. *Euro Surveill.* 2016 28;21(17).

[7] European Centre for Disease Prevention and Control. Surveillance Atlas of Infectious Diseases. Listeriosis - Data by Country and Year. Current time period: 2016. Διαθέσιμο από: <http://ecdc.europa.eu/en/data-tools/atlas/Pages/atlas.aspx>

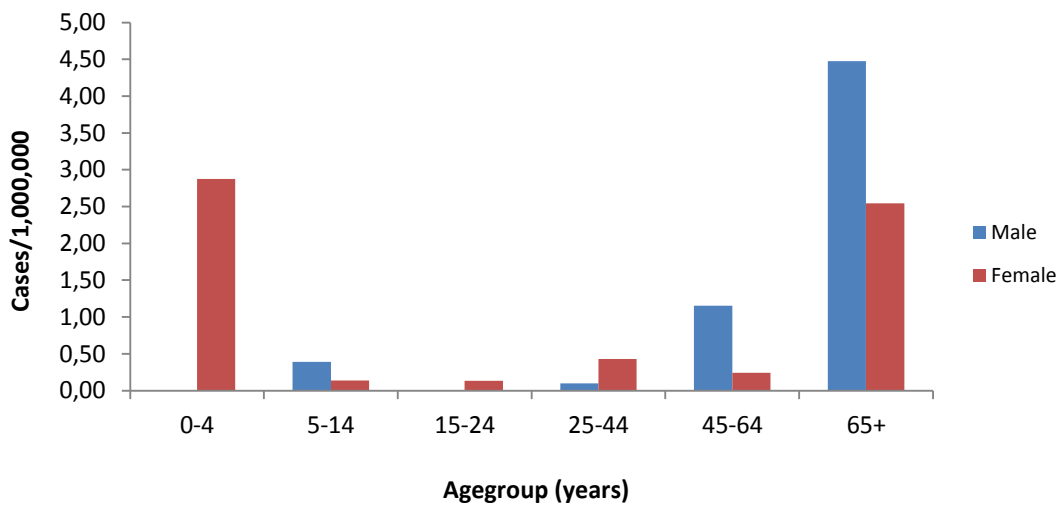
Table 1. Annual number of notified cases and notification rate of listeriosis in Greece, Mandatory Notification System, 2004-2017.

Year	Number of cases	Annual notification rate (per 1,000,000 population)
2004	3	0.27
2005	8	0.73
2006	7	0.64
2007	10	0.91
2008	1	0.09
2009	4	0.36
2010	10	0.90
2011	10	0.90
2012	11	0.99
2013	10	0.91
2014	10	0.92
2015	35	3.22
2016	20	1.85
2017	21	1.95
Total	158	1.03*

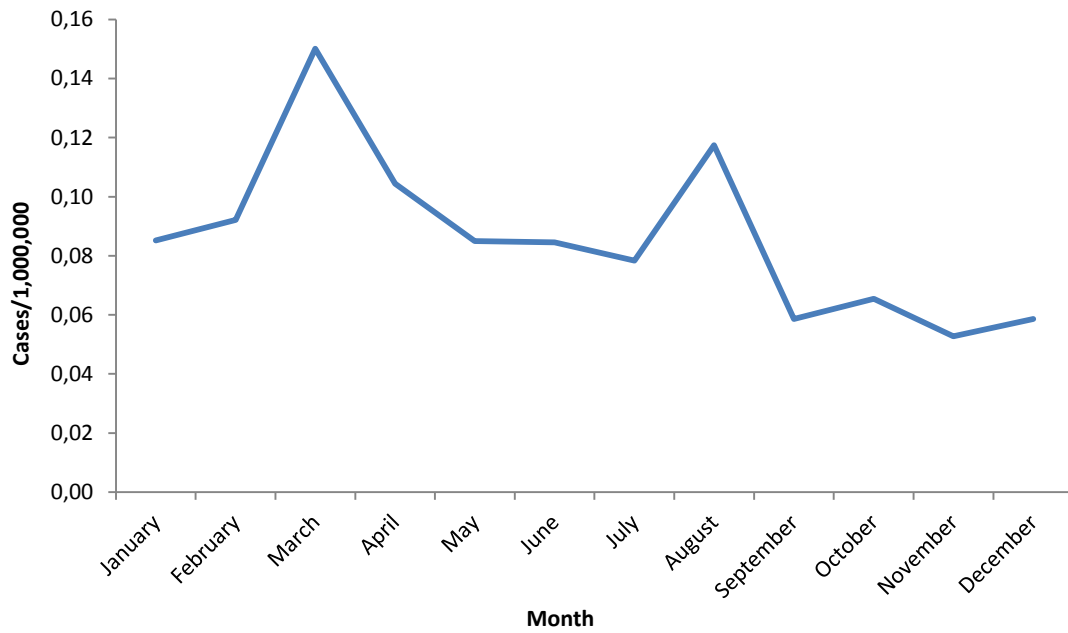
*Mean annual notification rate for the period 2004-2017



Graph 1. Annual incidence of listeriosis in Greece (number of cases per 1,000,000 population), Mandatory Notification System, 2004-2017.



Graph 2. Incidence of listeriosis by age group and gender in Greece, Mandatory Notification System, 2004-2017.



Graph 3. Mean monthly notification rate of listeriosis (cases/1,000,000 population) in Greece, Mandatory Notification System, 2004-2017.

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