

Information on congenital malformations in Elbasan region after the establishment of the national surveillance system in Albania in 2009

Sadet Gjata¹, Elizana Petrela², Altin Gjata³, Genc Burazeri^{2,4}

¹Health Center No.1, Elbasan, Albania;

²Faculty of Public Health, University of Medicine, Tirana, Albania;

³Regional Hospital, Elbasan, Albania;

⁴Department of International Health, CAPHRI, Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands.

Corresponding author: Dr. Sadet Gjata

Address: Health Center No. 1, Elbasan, Albania;

Telephone: +355684051170; E-mail: sadetgjata@gmail.com

Abstract

Aim: A national surveillance system on congenital malformations was established in Albania in 2009. The aim of this study was to portray the prevalence and types of congenital malformations in Elbasan prefecture during 2010-2013, following the introduction of the surveillance system also in this region of Albania.

Methods: A cross-sectional study was conducted covering the whole prefecture of Elbasan over the period 2010-2013. Data on the number of congenital malformations in Elbasan region for the period under study were retrieved from the national surveillance system. Conversely, the information about live births and infant deaths was collected from the Albanian Ministry of Health.

Results: Overall, during the period 2010-2013, there were 68 cases of congenital malformations in Elbasan region. The prevalence of the congenital malformations for the whole region of Elbasan for the overall period under study was 7.6 per 1000 live births (95%CI=5.9-9.6 per 1000 live births). Overall, there were 22 (32.4%) births defects affecting the cardiovascular system; 13 (19.1%) malformations of the musculoskeletal system; 11 (16.2%) chromosomal defects; 10 (14.7%) defects affecting the genital system; and 12 (17.6%) other types of congenital malformations.

Conclusions: Health professionals and policymakers in Elbasan region should take into consideration the magnitude and health consequences of congenital malformations in order to control and prevent them at a population level.

Keywords: birth defects, congenital malformations, Elbasan, surveillance system.

Introduction

In Albania, the rate of the overall congenital malformations (birth defects) at a national level was reported at 14.0 per 1000 live births in 2010 (1). As reported previously, in Tirana, the Albanian capital, the rate of congenital malformations for the years 2009 and 2010 was 23.7 and 24.1 per 1000 live births, respectively (1). In 2010, the most prevalent birth defects in Albania were conditions affecting the cardiovascular system, the musculoskeletal system and the digestive system (1,2). On the other hand, a fairly recent report indicated that the prevalence of congenital malformations in Tirana was 23.4 per 1000 live births during the period 2011-2013 (3). According to this recent report, the most affected systems from birth defects included the musculoskeletal, cardiovascular and genital systems. Furthermore, congenital malformations were more frequent among male newborns (3). Significant predictors of congenital malformations in Tirana region included advanced age of the mothers, a lower educational attainment, unemployment status and a lower gestational age (3). We have previously reported about the overall magnitude of birth defects in Elbasan region for the period 2003-2013 (4). According to this report, there was evidence of an increase in the overall rate of birth defects in Elbasan region from 1.1/1000 births (in the year 2003) to 8.7/1000 births (in the year 2013) (4). Regardless the observed inconsistencies, there was evidence of a linear trend over time (4). However, this analysis should be interpreted with caution because it includes two periods under investigation: 2003-2009 (before introduction of the national surveillance system on birth defects in Albania) and 2010-2013 (after establishment of the national surveillance system). Therefore, it is difficult to conduct a sound time-series analysis and interpret correctly the respective trend over time due to differences in data collection instruments employed before (2003-2009) and after (2010-2013) introduction of the national surveillance system on birth defects in Albania.

In any case, to date, there are no scientific reports about the types of congenital malformations in Elbasan region. The information on the exact types of birth

defects in Elbasan region was made possible only after 2009 due to the establishment of the surveillance system on congenital malformations. In this framework, the aim of this study was to portray the prevalence and types of congenital malformations in Elbasan prefecture during 2010-2013, following the introduction of the surveillance system also in this region of Albania.

Methods

This was a cross-sectional study covering the whole prefecture of Elbasan over the period 2010-2013, i.e. after the establishment of the national surveillance system for congenital malformations in Albania in the year 2009.

Data on the number of congenital malformations in Elbasan region for the period under study were retrieved from the national surveillance system. On the other hand, the information about live births and infant deaths was collected from the Albanian Ministry of Health.

Based on the number of birth defects (available from the national surveillance system on congenital malformations) and the number of births (available from the Ministry of Health), the prevalence of congenital malformations was calculated for each year under investigation.

For each year under study, the 95% confidence intervals (95% CIs) were calculated by use of WINPEPI (Program for Epidemiologists). In addition, the proportional prevalence for different types of birth defects (cardiovascular system, musculoskeletal system, genital system, chromosomal defects, or other types of congenital malformations) was calculated separately for each year under investigation.

Results

Table 1 presents the prevalence of congenital malformations in the prefecture of Elbasan during the period 2010-2013, after the establishment of the national surveillance system on congenital malformations in 2009. Overall, during the period 2010-2013, there were 68 cases of congenital malformations in Elbasan region. Hence, the prevalence

of the congenital malformations for the whole region of Elbasan for the overall period under study was 7.6 per 1000 live births (95%CI=5.9-9.6 per 1000 live births). There was evidence of an inconsistent trend over time with the lowest prevalence of

congenital malformations in the year 2010 [5.7 (95%CI=3.0-9.7) per 1000 live births] and the highest peak in 2013 [8.7 (95%CI=5.2-13.6) per 1000 live births] and especially in 2011 [9.4 (95%CI=5.9-14.4) per 1000 live births] (Table 1).

Table 1. Prevalence of congenital malformations in Elbasan region during 2010-2013

Parameter	Year				Total
	2010	2011	2012	2013	
Number of births	2276	2224	2306	2183	8989
Number of birth defects	13	21	15	19	68
Prevalence (per 1000 live births)	5.7 (3.0-9.7)*	9.4 (5.9-14.4)	6.5 (3.6-10.7)	8.7 (5.2-13.6)	7.6 (5.9-9.6)

*95% confidence intervals (95% CIs).

Table 2 presents the distribution of congenital malformations in the prefecture of Elbasan during the period 2010-2013. Overall, during 2010-2013, there were 22 (32.4%) birth defects affecting the cardiovascular system; 13 (19.1%) malformations of the musculoskeletal system; 11 (16.2%) chromosomal defects; 10 (14.7%) defects affecting the genital system; and 12 (17.6%) other types of congenital malformations. The proportional prevalence of birth defects affecting the cardiovascular system and the genital system was quite stable over

time (for the cardiovascular system: 30.8% in 2010 and 31.6% in 2013; for the genital system: 15.4% in 2010 and 15.8% in 2013), whereas the proportional prevalence of birth defects affecting the musculoskeletal system decreased from 23.1% to 15.8% in 2013. Furthermore, there was a relative peak in chromosomal defects in 2011 (19.0%). In any case, all these figures should be interpreted with extreme caution due to the unstable estimates (that is a relatively small number in each subgroup involved in the current analysis) (Table 2).

Table 2. Types of congenital malformations in Elbasan region during 2010-2013

Birth defect	Year				Total
	2010	2011	2012	2013	
Cardiovascular system	4 (30.8)*	7 (33.3)	5 (33.3)	6 (31.6)	22 (32.4)
Musculoskeletal system	3 (23.1)	4 (19.0)	3 (20.0)	3 (15.8)	13 (19.1)
Chromosomal defects	2 (15.4)	4 (19.0)	2 (13.3)	3 (15.8)	11 (16.2)
Genital system	2 (15.4)	3 (14.3)	2 (13.3)	3 (15.8)	10 (14.7)
Other defects	2 (15.4)	3 (14.3)	3 (20.0)	4 (21.0)	12 (17.6)
Total	13 (100.0)	21 (100.0)	15 (100.0)	19 (100.0)	68 (100.0)

* Column percentages.

Discussion

Our analysis informs about the magnitude and distribution of the major types of congenital malformations in Elbasan prefecture, which constitutes one of the major regions of central Albania. Contrary to the expectations – related to a high degree of air pollution – the overall prevalence of congenital malformations in Elbasan region was not the highest

in Albania. This analysis included the years immediately after the set up of the nationwide surveillance system on congenital malformations which was introduced in Albania in 2009. For all the years under investigation, the major types of birth defects in Elbasan prefecture involved the cardiovascular system followed by the musculoskeletal system and next by the genital system.

These findings related to the distribution of different types of congenital malformations in Elbasan prefecture are generally in line with those reported recently from Tirana region (3). Hence, in Tirana prefecture, the most prevalent types of birth defects involve the musculoskeletal, cardiovascular and genital systems (3), a situation which is somehow similar to the evidence we obtained from Elbasan region. Furthermore, our findings are also compatible with the nationwide estimates reported by the Albanian ministry of Health (5).

Our findings related to the distribution of the major types of congenital malformations in Elbasan region are also generally compatible with the reports from elsewhere. From this point of view, at a global scale, the most prevalent congenital malformations involve the cardiovascular system, neural tube defects, and the Down syndrome (6).

Congenital malformations constitute an important public health issue at a global scale. As a matter of fact, worldwide, there are more than 20 million newborns diagnosed with congenital malformations every year, of whom, about eight million experience serious birth defects (7).

Our current analysis may have several limitations including the reporting system which was introduced in

Albania in 2009. Hence, notwithstanding the establishment of a valuable tool such as the surveillance system on congenital malformations in Albania, for the time being there are serious challenges related to partial information, or even under-recording of birth defects. Therefore, findings related to the magnitude and types of birth defects in Elbasan region should be somehow interpreted with caution given the possibility of incomplete and/or not fully accurate data. Major efforts should be undertaken in Albania to strengthen and expand the current surveillance system on congenital malformations in line with the current international experiences and best practices (8-10).

Regardless of its potential limitations, our analysis provides useful evidence about the prevalence and distribution of the major types of birth defects in Elbasan prefecture, which is a very important region of central Albania. Future studies should explore in-depth the exact magnitude and the main determinants of each type of congenital malformations in Elbasan region as well as in the other regions of transitional Albania.

In conclusion, health professionals and policymakers in Elbasan region should take into consideration the magnitude and health consequences of congenital malformations in order to control and prevent them at a population level.

Conflicts of interest: None declared.

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