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Short Communication

Association of weather conditions and the day with extreme number of deliveries with spontaneous onset in a tertiary referral perinatal center

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Abstract

Background and purpose: *The effect of weather on people's well-being and health has been previously noticed and has been a subject of interest for medical professionals and laypeople throughout human history. There are many studies connecting gynecology and obstetrics with weather, some of them investigating the weather and physiological processes such as onset of labor.*

Materials and methods: *In this paper we tried to find relationship between weather conditions and the day with extreme number of deliveries with spontaneous onset (contractions and/or rupture of membranes) in a tertiary referral perinatal center. It is still debatable whether we could connect the weather conditions with actual childbirth.*

Results*: A case analysis shows that there could be a connection between the development of the weather situation and the extreme number of deliveries with spontaneous onset.*

Conclusion: *Unfavorable biometeorological conditions were the result of weather conditions that affect people. In our case there was strong cold advection during the analyzed period, especially on the day with an extreme number of deliveries with spontaneous onset, and significant drop of barometric pressure.*

INTRODUCTION

The effect of weather on people's well-being and health has been previously noticed and has been a subject of interest for medical professionals and laypeople throughout human history. There are many studies connecting gynecology and obstetrics and weather, with some of them investigating the weather and physiological processes such as onset of labor *(1-3)*. In this paper we present weather conditions on a particular day with fourteen deliveries as a clinical – biometeorological observation.

MATERIAL AND METHODS

Data

The study was conducted in the city of Zagreb for one year emergency unit medical data from maternity ward in Department of Gynecology and Obstetrics, University Hospital Sveti Duh within December

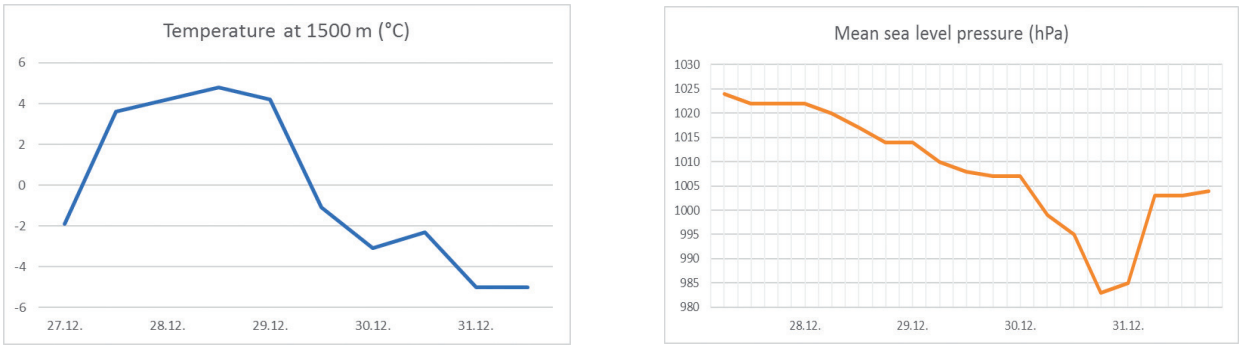

Figure 1. *Temperature at 1500 m (left) and mean sea level pressure (right) for Zagreb for period from December 27 to December 31, 2011. (Source: Croatian Meteorological and Hydrometeorological Service, Zagreb, Croatia).*

1, 2011, and November 30, 2012, and the meteorological data from the Croatian Meteorological and Hydrometeorological Service in Zagreb, Croatia. In the studied period there were 2190 deliveries (6.0 deliveries per day) with spontaneous onset, and 9 days were found with > 12 deliveries which started spontaneously (double on more than a double than average number).

Weather and biometeorological conditions

We assumed that day with an extreme number of deliveries with spontaneous onset in the studied period should correlate with marked changes in meteorological and biometeorological conditions. However, we also analyzed weather conditions 2 days before and after the selected day, as we expected the weather not only to have an instant effect on parturition.

The study was conducted in the city of Zagreb. Zagreb is located in the continental part of the country. Its climate has temperate continental characteristics with the quite variable atmospheric conditions throughout the whole year *(4)*.

RESULTS

In the analyzed case (December 29, 2011), 14 women were admitted to the hospital and all of deliveries with spontaneous onset. In the observed period (from December 27 to December 31, 2011), in Zagreb it was wintertime, and the weather was at the beginning stable and cold, characterized by below average temperature. Also, there was continuous flow of cold air (cold advection) and mainly weak precipitations. It is interesting to notice that one day before an extreme number of deliveries with spontaneous onset, the temperature during the day did not exceed 0 degrees – it was very cold. On the other side, the highest drop of temperature in the layer from ground to approximately 1500 m was recorded on December 29 (Figure 1). The constant drop of mean sea level pressure was recorded in the analyzed period due to the frontal system which moved over Croatia on December 29 (Figure 1).

DISCUSSION

Several studies have been conducted on the relationship between delivery and barometric pressure, which shows constant changes with changes in weather, but there is no generally accepted view on this *(1,3,5)*. Biometeorological conditions were favorable in the beginning and the end of the period, with worsening on a day with the highest number of deliveries with spontaneous onset (Table 1).

For minacious investigation of weather conditions favorable for initiation of parturition we need to compare weather conditions around days with significantly higher number of deliveries with spontaneous onset through the longer period. As the beginning of labor did not occur in the moment of hospital admission and subsequent delivery, it is debatable whether we could connect the weather conditions with actual childbirth *(3)*. We faced with similar obstacle in our previous paper, in which we did not find a connection between biometeorological forecast and complications of early pregnancies *(6)*.

Table 1. *Biometeorological forecast for Zagreb (Croatia) during observed period (Source: Croatian Meteorological and Hydrometeorological Service, Zagreb, Croatia).*

Date	Biometeorological forecast
27.12.2011.	Favorable
28.12.2011.	Favorable
29.12.2011.	Unfavorable
30.12.2011.	Unfavorable
31.12.2011.	Relatively favorable

To summarize, unfavorable biometeorological conditions were found on the day with the highest number of deliveries with spontaneous onset in the studied period, and the day after. Unfavorable biometeorological conditions were the result of weather conditions that affect people. In our case there was strong cold advection during the analyzed period, especially on the day with an extreme number of deliveries with spontaneous onset, and significant drop of barometric pressure. Future well designed observational studies should enable better prediction of days with extreme number of deliveries with spontaneous onset, consequently preparing obstetricians and midwives for upcoming days. This could permit reorganization of stuff numbers which should ease up the everyday workload in labor wards.

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