Cartogram of heart attack incidence in Kazakhstan

Kenzhebekova Shyryn, Kydyrbayev Askat, Saltanat Urazova, Igissinov Nurbek

Summary Slide

Background. According to the current statistics, 17.5 million people perish annually because of the CVD, 80% of them from heart attack/myocardial infarction (hereafter MI) and strokes. MI continues to lead among economically developed countries, despite the significant progress of surgical and endovascular revascularization methods. A dimensionless assessment of the incidence is needed for diagnosis and prevention, which can dramatically reduce the risk of development in these regions.

Aim. To study the regional features of incidence of MI in Kazakhstan by compiling cartograms

Methods. A dimensional assessment of the MI (IDC-10 I21-22) incidence is presented using the cartogram, which was carried out after preliminary determination of the average annual indicators in individual medical-geographical regions, then the arithmetic mean coefficients and standard deviations were calculated, also on their basis, the steps scale of the cartogram was determined.

79th International Scientific Conference of the University of Latvia

UNIVERSITY OF LATVIA

Research Results

During the study period (2009–2018), over 82 809 new cases of MI were registered. The average annual incidence of the heart attack was 69.0±5.1 per 100 000 people. In dynamics, the incidence rates tended to increase from $56.8\pm0.7^0/_{0000}$ in 2009 to $116.2\pm1.0^0/_{0000}$ in 2018, the established difference is significant (t=60.96, p=0.000). The average annual growth rate of the equalized indicator was T=+9.3 %.

On this basis, the following groups of areas were defined

Research Results
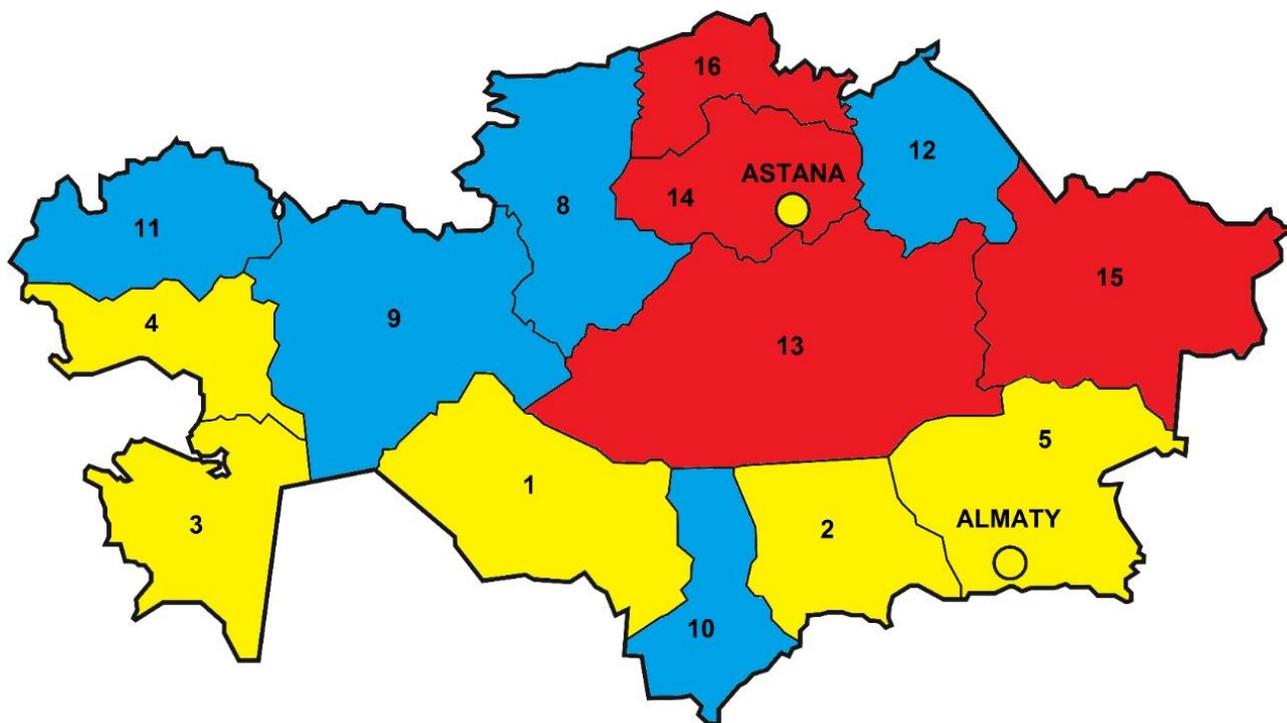
1. Regions with low indicators (up to $53.2^0/_{0000}$) included Kyzylorda ($36.5\pm8.7^0/_{0000}$), Zhambyl ($44.7\pm7.9^0/_{0000}$), Mangystau ($48.2\pm8.1^0/_{0000}$), Atyrau ($50.9\pm5.3^0/_{0000}$), Almaty ($50.9\pm5.3^0/_{0000}$) regions and as well as the cities Almaty ($53.2\pm5.9^0/_{0000}$) and Nur-Sultan ($40.9\pm7.9^0/_{0000}$).

2. Regions with average indicators (from 53.2 to $72.5^0/_{0000}$) included Kostanay ($58.4\pm4.0^0/_{0000}$), Aktobe ($58.2\pm10.8^0/_{0000}$), South Kazakhstan ($58.8\pm7.8^0/_{0000}$), West Kazakhstan ($63.7\pm9.0^0/_{0000}$) and Pavlodar ($72.5\pm5.3^0/_{0000}$) regions.

3. Regions with high indicators ($72.5^0/_{0000}$ and above) included Karaganda ($85.7\pm3.2^0/_{0000}$), Akmola ($107.6\pm7.3^0/_{0000}$), East Kazakhstan ($128.8\pm6.5^0/_{0000}$) and North Kazakhstan ($130.5\pm7.6^0/_{0000}$) regions.

Conclusion

European countries such as Finland, England, Germany, as well as the USA and Australia had the highest death rates owing to MI around the world at the last century. Due to the large-scale measures of primary prevention, surgical interventions, and well-designed programs which had been taken at the state level, these countries achieved success. Thus, the cartogram brings scientific and practical value to the field of medicine, since the studies in this aspect make it possible to assess the influence of the risk factors and preventive measures.