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COLORECTAL CANCER INCIDENCE: A SPATIAL ANALYSIS IN SOUTHERN PORTUGAL 1998-2006

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INTRODUCTION

Understanding geographical differences in health became a concern of epidemiologists. Geographical association studies and spatial disease mapping studies have emerged due to the development of new spatial statistical methods.

OBJECTIVE

To investigate the influence of geographical environment in colorectal cancer (CRC) incidence in Southern Portugal. Due to the important role of socioeconomic status in the risk of CRC, this variable has also been taken into account.

MATERIALS AND METHODS

This retrospective population-based study is based on data on colorectal cancer registered by the Southern Portuguese Cancer Registry (ROR Sul) between 1998 and 2006. Bayesian hierarchical models were applied to model colorectal incidence at a county level and resulting relative risks were used to build risk maps for cancer incidence. Results were obtained using Integrated Nested Laplace Approximation (INLA). Age-Period-Cohort (APC) models were also applied.

RESULTS

22.362 individuals registered in ROR Sul with CRC were studied. 15.220 (68%) had colon cancer: 56% were men, with a high overall mortality (62%). Regarding rectum cancer, it affected mainly men (63%), with an overall mortality similar to the one observed for colon cancer. Median age of patients with rectum and colon cancers was 70 years (colon:P25 = 62; rectum: P25 = 61; P75 = 77 in both cases). The spatial study indicated that, for both cancers, the risk seems to be lower in the south of the region under study; socioeconomic status only had impact in colon cancer incidence and male had a higher risk of CRC. APC results showed that age at diagnosis played the main role in both cancers incidence; regarding the effect of cohort, an increased risk in individuals born after 1940 was detected and period seemed to have no impact during these 9 years.

DISCUSSION AND CONCLUSIONS

The south of Southern Portugal is a low risk region for CRC cancer, probably due to Mediterranean dietary habits and lifestyle. Socioeconomic status seems to have no impact in rectum cancer incidence. According to APC models, the biological factor age at diagnosis proved to have a strong impact on the incidence of CRC; it is likely that the period effect had no impact because of the short interval of time that is being studied. Acknowledgement: This research has been partially supported by National Funds through FCT — Fundação para a Ciência e a Tecnologia, project PEst-OE/MAT/UI0006/2011.