Efficacy and Effectiveness: Evaluation of Endoscopic Stomach Cancer Screening, Compared to Radiography and Pepsinogen Test in High Risk People in Iran

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Background Gastric cancer is the fourth most common cancer and the second cause of cancer death throughout the world. The prevalence of gastric cancer (GC) progressively increased during the last decades in Iran. Health-care systems are always faced with high costs of treatment of gastrointestinal cancers including stomach cancer. The best strategy to reduce the mortality for GC is to schedule appropriate screening and surveillance programs, which raises many relevant concerns considering its worldwide variability, natural history, diagnostic tools, therapeutic strategies, and cost-effectiveness.

The aim of this study was to evaluate the effectiveness and cost-effectiveness of gastric cancer screening methods (Endoscopy, Radiography and Pepsinogen testing) comparing with themselves and with no screening in high risk people in Iran.

Methods A systematic review of relevant databases, including PubMed, Cochran, Scopus, Google Scholar was conducted. The evaluating the quality of studies were carried out independently by two persons using standard checklists. To assess the cost-effectiveness, the model of decision tree was used. The hypothetical population of 1 Million of the high risk of GC were entered into the model. The study was undertaken from healthcare payer perspective. The outcome of the study was the 5 years survival and QALY of the high risk people.

Results The 2866 studies were found in the first phase of searching through databases. After eliminating duplicate studies and studies incompatible with the inclusion and exclusion criteria of our study, 8 studies selected. The sensitivity of Endoscopy, radiography and pepsinogen testing were 93%, 83% and 77% respectively. The result of modelling showed that with no screening, only 9 84 875 persons out of 1 million high risk individuals would survive after 5 years; whereas by Endoscopy and Radiography and pepsinogen testing 999,691, 999,344 and 999,113 people will have 5 years survival, respectively.

Conclusions In terms of effectiveness, endoscopy is more susceptible to both radiographic tests and pepsinogen tests. The cost of treatment in the non-screening program was estimated at three times the endoscopic screening program. Given the high effectiveness of endoscopy and its therapeutic aspect, it is the best option for screening the population at risk.

Identification of Hub Genes and Analysis of Prognostic Values in Pancreatic Ductal Adenocarcinoma by Integrated Bioinformatics Methods

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Background Pancreatic ductal adenocarcinoma (PDAC) is one of the lethal cancers in the world, and more molecular mechanisms should be elucidated to meet the urgent need of developing novel detection and therapeutic strategies. We analysed the related microarray data to find the possible hub genes and analysed their prognostic values using bioinformatics methods.

Methods The mRNA microarray datasets GSE62452, GSE15471, GSE102238, GSE16515, and GSE62165, were finally chosen and analysed using GEO2R. The overlapping genes were found by Venn Diagrams, functional and pathway enrichment analyses were performed using the DAVID database, and the protein-protein interaction (PPI) network was constructed by STRING and Cytoscape. OncoLnc, which linked TCGA survival data was used to investigate the prognostic values.

Results In total, 179 differentially expressed genes (DEGs) were found in PDAC, among which, 130 were up-regulated genes, and 49 were down-regulated genes. DAVID showed that high expression of ITGA2, MMP7, ITGB4, ITGA3, VCAN and PLAU might predict poor survival results in PDAC.

Conclusions The present study identified hub genes and pathways in PDAC, which may be a potential target for its diagnosis, treatment, and prognostic prediction.