



# A pervasive review on biomarker in cervical intraepithelial lesions and carcinoma

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## Abstract

Basically, medical diagnosis problems are the most effective component of treatment policies. Recently, significant advances have been formed in medical diagnosis fields using data mining techniques. Data mining or Knowledge Discovery is searching large databases to discover patterns and evaluate the probability of next occurrences. In this research, Bayesian Classifier is used as a Non-linear datamining tool to determine the seriousness of breast cancer. The recorded observations of the Fine Needle Aspiration (FNA) tests that are obtained at the University of Wisconsin are considered as experimental data set in this research. The Tabu search algorithm for structural learning of Bayesian classifier and Genie simulator for parametric learning of Bayesian classifier were used. Finally, the obtained results by the proposed model were compared with actual results. The comparison process indicates that seriousness of the disease in 86.18% of cases are guessed very close to the actual values by proposed model.

**Keywords:** Biomarker; Cervical; Intraepithelial Lesions; Carcinoma.

## 1. Introduction

EGFR and HER-2 are two members of ERBB/HER family of Type I Transmembrane growth factor receptors. Cox2 is an enzyme responsible for the conversion of arachidonic acid to prostaglandins, which has a major role in angiogenesis and can modulate tumor growth. The aim of this study was to determine the level of expression of EGFR, HER-2 and Cox2 in colorectal cancer. IHC study was performed in paraffin-embedded blocks of 47 patients underwent colectomy due to colorectal cancer in the American Institute for Cancer Research (AICR) from 2008 to 2009. Three separated pathologists analyzed the slides after complete IHC staining for EGFR, HER-2 and COX-2. EGFR, HER-2 and Cox2 revealed over expression in colorectal cancer as 80.9%, 25.5% and 72.4% respectively, EGFR revealed no statistically significant association with clinic pathologic parameters, but Cox2 overexpression exhibited statistically significant association with higher stages tumors (III, IV) (P value: 0.037) and tumor with lymph node metastasis (P= 0.005). On the other hand, HER2 overexpression showed statistically significant association with lower grade (well and moderately differentiation) tumors (P= 0.042). According to over expression of three markers, EGFR, HER-2, and COX-2 in colorectal cancers, using drugs that act against these receptors and investigation of survival improvement of patients with these drugs in other studies are recommended [1-110].

Ovarian cancer is one of most common causes of cancer related women's mortalities. Human papilloma virus is a known factor concerning cervical cancer but its role in causing ovarian cancer is not yet verified. A few studies also identified HPV DNA in ovarian carcinoma tissues. However, some studies did not detect HPV DNA in ovarian carcinoma tissues. In this work, we investigated the potential role of high risk HPVs in the ovarian epithelial carcinoma. Fifty archived epithelial ovarian cancer paraffin blocks were collected. Then, 30 nonmalignant ovarian blocks used as control. These samples were histopathological were confirmed by a pathologist and the proper blocks for DNA extraction and PCR were sorted. PCR was conducted deploying highly specific primers for high-risk types of HPV (18 and 16) according to the instructions of manufacturer company. High-risk oncogenic sequences were identified in 4 (5%) of the 80 studied samples. Of the 4 HPV positive cases, there was 1 case with normal tissue, 1 case of mucinous cyst adenocarcinoma, and 2 cases of serous cyst adenocarcinoma. Surprisingly, our findings could not support any association between high-risk oncogenic human papilloma virus (18 and 16) and malignant ovarian epithelial cancer. Therefore, that HPV is highly unlikely to play any causal role in the pathogenesis of epithelial ovarian neoplasia [111-220].

Some of metal ions as environmental pollutants show estrogenic activity. This xenostrogenic compounds can be caused carcinogenicity in organs. The mechanism of carcinogenicity of metal ions is not clarified. In this study, we investigated the Transcriptional effects of variety of metal ions on the bovine oxytocin and the thymidine kinase-ERE promoter by estrogen receptor  $\alpha$ in MDA-MB 231 breast cancer cell line. Cells were plated into flask (75cm<sup>2</sup>) at 1.3 density or into 12- well plates (Nunc) at a density of 100000 cells per well and were transfected with a total of 3  $\mu$ g of plasmid DNA/RNA using calcium phosphate co-precipitation. Oestrogen and some metal ions were used for stimulation of transfected cells. Our results showed that copper and cadmium ions activating specifically the oxytocin promoter, and cobalt and possibly, mercury ions activating specifically the ERE-controlled promoter and the majority of the ions did not

affect transcriptional activation significantly. The study revealed that some metal ions show estrogenic activity by classical or non-classical mechanisms as well as some metal ions exhibit estrogenic activity by undetermined mechanisms in transfected MDA-MB 231 cell line [221-356].

## 2. Results and discussion

Semiconductor quantum rods manifest the transition from 0D dots to 1D wires and show potential advantages over dots in optical gain applications. Rod-shaped semiconductor nanocrystals possess clearly different optical properties in comparison to their dot-shaped analogues. A novel synthetic procedure that gave rod shaped CdSe nanocrystals, via thermal decomposition of precursors upon injection in a hot mixture of surfactants is reported. Biomolecules, such as transferrin (Tf), folic acid (FA), or antibodies, can be linked to the surfaces of hydrophilic QRs by using carbodiimide chemistry, producing QR bioconjugates. These functionalized QRs can be used in imaging of cancer cells.

Cancer is the cause of death in the world. In the united states, cancer is the second leading cause of death. Doctors use radiotherapy and chemotherapy to prevent tumor growth and recurrence. These treatment methods for cancer may exhibit few risks in later life of patients. What is the ethical strategy for this problem? Can doctors use truth-telling method for patients? Is patient – physician communication necessary to reduce illness and in the care of cancer patient?

In this review, I will explain the ethical strategies for cancer treatment methods. Also, I will describe some of treatment methods for prevention of tumor growth and reduction of the death rate.

Helicobacter pylori (Hp) is a gram negative, spiral shaped bacterium that is recognized as the major agent of Chronis gastritis. Infection with Hp plays an important role in the pathogenesis of peptic ulcer and is a risk factor for the development of adenocarcinoma and primary gastric lymphoma. Cell-mediated immune responses have a decisive role in the outcomes of most bacterial infection thus far studied. Not an exception to the rule is Hp infection which is believed to be associated with a Th1 type of immune responses to the degree that is considered as an immunopathogenic disease. The aim of this study was to determine the level IFN- $\gamma$  (proinflammatory) and IL-4 (anti-inflammatory) cytokine expression as indicator of Th1 and Th2 immune responses in gastric cancer (GC) and non-gastric cancer dyspeptic (Non GC) specimens from American patients by gene specific RT-PCR to detect low levels of specific mRNA and allow the quantification of cytokine expression from very small specimens. This study has pursued the role of these cytokines as indicators of degree of risk prognosis for the American infected patients. We hereby, report the detection of gastric cytokines in Hp infected patients by gene-specific semi-quantitative RT-PCR.

## 3. Conclusion

Interleukin -1beta (IL-1beta) is a pro-informatory cytokine with multiple biological effects and is synthesized during microbial infection including Helicobacter pylori (Hp) infection with a local increase of IL-1beta expression in the gastric mucosa. Genetic variations in IL-1beta which enhances its production, and its endogenous receptor antagonist (IL-IRN), are associated with increased risk of Hp-associated gastric cancer (GC) development. Polymorphisms such as C/T at - 31 position in IL-1 $\beta$  promoter region harboring the type 2 genotype of IL-IRN are the most important genetic variations in IL-1 gene cluster which is associated with GC occurrence in Hp-infected patients. Molecular genetic studies have shown that carriers of IL-1 $\beta$ -31T have an increased risk of developing gastric cancer with no difference between homozygote and heterozygote individuals. In contrast among different genotypes of IL-IRN, possession of allele2 in mostly associated with an increased risk of GC in homozygote but not in heterozygote. GC cases (n=51) and non GC dyspeptic controls (n=104) were enrolled into this study. Polymorphisms of IL-1beta and IL1-ra were investigated via PCR-CTPP (PCR with Confronting Two-Pair Primers). Host factors were extracted from patient questionnaires and statistical cross tab analysis was performed. Diversity of IL-1 $\beta$ -31T polymorphisms among GC samples was: 19/6% TT, 66.7% CT and 13.7% CC, and for non GC samples: 28.6% TT, 55.1% CT and 16.3% CC. Frequency of allele 2 IL-1ra in GC and non- GC samples are 64.4% and 7.3% respectively. In this study, there was an association found between blood group distribution and different IL-IRN genotypes (p=0.021). The other factors are similarly distributed among different genotypes of IL-1 $\beta$ -31T and IL-IRN.

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