Abstract

Diagnosis and prognosis of the cancer can be done through the radiological, surgical and pathological assessment of cancer tissue samples. Cancer detection and grading of biopsy image is the standard clinical practice for the diagnosis and prognosis of cancer. In a large hospital, a pathologist typically handles number of cancer detection cases per day. It is, therefore, a very difficult and time-consuming work. This paper proposes a method for automatic cancer diagnosis and prognosis to assist pathologists by providing second opinions and reducing their workload. Computer-aided cancer detection and grading system for cancer tissue cell nuclei in histological image is introduced and validated as part of the biopsy analysis system. Cancer cell nuclei are selectively stained with monoclonal antibodies, such as the ant estrogen receptor antibodies, which are widely used as part of assessing patient diagnosis and prognosis in breast cancer. Many features used in the analysis of histopathology imagery are inspired by grading features defined by clinical pathologists as important for diagnosis and prognosis. This paper micro cancer object of breast tumor classified using feed forward back propagation Neural Network. Twenty six hundred sets of cell nuclei characteristics obtained by applying cancer detection and cancer image analysis techniques to microscopic slides. The dataset consist of eight features which represent the input layer to the FNN. The FNN will classify the micro cancer object into type4, type3, type2 and type1. The sensitivity, specificity and accuracy were found to be equal 99. 64%, 98. 54% and 98. 80% respectively. It can be concluded that FNN gives fast and accurate classification and it works as promising tool for
classification of cancer cell nuclei and grading. The overall accuracy of cancer detection and grading of the proposed system is 96.50%. Thus, this approach is suitable for automated real time breast cancer diagnosis and prognosis tool.

References

A Biopsy Analysis System for Cancer Diagnosis and Prognosis


Index Terms

Computer Science

Artificial Intelligence

Keywords

Segmentation

Feature Extraction

Biopsy

Biopsy Image

Neural Network

Cancer Detection

Biopsy Scoring

Biopsy Grading