عنوان مقاله:

Early detection of breast cancer through liquid biopsy using deep learning technology

محل انتشار:

چهاردهمین کنگره بین المللی سرطان پستان (سال: 1397)

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خلاصه مقاله:

Introduction & Aim: Breast cancer is one of the most prevalent and fatal types of cancer among women. The early diagnosis of breast cancer is a crucial step in reducing its morbidity and mortality. Deep learning approaches have been shown its great potential in various segments of medical researches. In the present study, we propose a new method for early detection of breast cancer using artificial intelligence and deep learning that assess the level of protein biomarkers and cell-free DNAs in blood samples to detect breast cancer. Methods: In this study, we used previously published dataset named CancerSeek. A total of 209 patients with non-metastatic breast cancer and 812 healthy patients included in the study. We used Tensorflow package in python environment to deploy our deep learning model. We trained the data set using 10 cross-folds method. Results: Under our experimental setting, our model reached the specificity and sensitivity of 97% and 81%, respectively. Meanwhile, the area under the curve was 97.13% which was higher than other similar studies that used this database. Conclusion: The results of the study demonstrated that using a blood sample analysis through deep learning can potentially lead to a new approach in the early diagnosis of cancer. Furthermore, deep learning technology can give us the ability to eliminate bias, interpret uncertainty, explain data and reduce diagnosis costs more efficiently.

کلمات کلیدی: