



Journal Article



Discovery of serum biomarkers in astrocytoma by SELDI-TOF MS and proteinchip technology

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Abstract

Objective To discover serum biomarkers in astrocytoma patients for early detection of glioma and evaluation of prognosis.

Methods A total of 140 serum samples were analyzed using the weak cation-exchange (WCX) chips. Among those, 73 were sera from astrocytoma patients, 56 from normal controls, and 11 from other brain tumors. For building a diagnosis model, the samples were randomly split into a training set and a test set with similar distribution of case and control samples. Proteomics profiles were obtained using a PBSII instrument and the data were analyzed with the accompanying software.

Results Seven serum biomarkers were significantly deregulated in astrocytoma group comparing to the normal control group. Among them, four were up-regulated and three were down-regulated. A decision tree classification method were developed using these seven markers. A sensitivity of 84.6% and a selectivity of 84.6% were achieved to discriminate astrocytoma from normal controls. In addition, a correlation of these markers with the astrocytoma malignancy was observed.

Conclusions Proteomics approaches such as SELDI-TOF mass spectrometry could greatly facilitate the discovery of serum biomarkers in astrocytoma. The discovered biomarkers might show great potential for early detection of astrocytoma and evaluation of prognosis for those clinical suspect astrocytoma patients. However, this need warrant further study.

Keywords Serum - Astrocytoma - Biological markers - Proteinchip array - Proteomics

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