Detection of patients with functional dyspepsia using wavelet transform applied to their electrogastrogram

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The aim of the present study was to develop a classifier able to discriminate between healthy controls and dyspeptic patients by analysis of their electrogastrograms. Fifty-six electrogastrograms were analyzed, corresponding to 42 dyspeptic patients and 14 healthy controls. The original signals were subsampled, filtered and divided into the pre-, post-, and prandial stages. A time-frequency transformation based on wavelets was used to extract the signal characteristics, and a special selection procedure based on correlation was used to reduce their number. The analysis was carried out by evaluating different neural network structures to classify the wavelet coefficients into two groups (healthy subjects and dyspeptic patients). The optimization process of the classifier led to a linear model. A dimension reduction that resulted in only 25% of uncorrelated electrogastrogram characteristics gave 24 inputs for the classifier. The prandial stage gave the most significant results. Under the