生物物理学报(2007) 23(5), 383-388

PDF文档

基于空间ICA和时间相关方法的人脑视觉皮层V5区的功能连通性研究

邵小丽*[1]、王惠南[1]、黄伟[2]
1 南京航空航天大学
2 南京军区南京总医院医学影像科

利用功能磁共振成像技术，将空间ICA和时间相关方法相结合来研究不同活动状态下人脑视觉皮层V5区的功能连通性。首先利用空间ICA处理组块视觉运动刺激的数据，定位V5区；然后分别计算静息和连续视觉运动刺激两种稳态下V5区与其它脑区低频振荡的时间相关，检测出该区的功能连通网络。实验结果表明，静息时V5区的功能连通网络更广泛，且与已知的解剖连通一致；当被试接受连续视觉运动刺激时，与V5区连通的脑区网络局限在视觉皮层，此时的网络特定于处理视觉运动这一任务。

Study on functional connectivity of human V5 in visual cortex based on spatial independent component analysis and temporal correlation

Functional connectivity of human V5 in different brain activity was investigated by combing spatial independent component analysis with temporal correlation. First, V5 was localized by performing spatial independent component analysis (sICA) on the data from block-design visual motion runs, then low frequency correlations between V5 and other brain regions were calculated in two steady states (resting state and the state with continuous visual motion stimulus) to detect the functional connectivity networks. The experiment indicated that: The functional connectivity network of V5 was more extensive and was consistent with the known anatomical connectivity during rest; when subjects were viewing motion, the network was limited in the visual cortex suggesting that V5 was acting in concert with a network specific to the visual motion processing task.

关键词

空间ICA(Spatial independent component analysis); 时间相关(Temporal correlation); 功能连通(Functional connectivity); 视觉运动(Visual motion)