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血氧水平依赖磁共振功能成像评价国人女性正常乳腺

BOLD fMRI in evaluation on normal breast of Chinese woman

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中文摘要:

目的 观察不同年龄、不同腺体类型、不同部位正常乳腺组织的R^{2*}值及其与乳腺组织血供的相关性。**方法** BI-RADS 1级患者18例,脂肪型和少量腺体型6例,多量腺体型8例,致密腺体型4例。根据女性乳腺组织的血管构筑特点,将乳腺组织分成乳头乳晕后区(相当于中央区)、前部和后部。应用3.0T MR系统进行成像,以Functool软件处理原始数据,比较不同腺体类型、乳腺不同部位、绝经组与月经期组患者乳腺的R^{2*}值以及R^{2*}值与乳腺组织信号增强率之间的关系。**结果** 左侧乳腺各部位的R^{2*}值为:中央区(64.77±17.29)Hz,前部(51.95±21.24)Hz,后部(47.41±16.18)Hz;右侧乳腺分别为:中央区(66.17±19.80)Hz,前部(52.48±12.21)Hz,后部(46.13±12.56)Hz,同侧乳腺不同部位的R^{2*}值有明显差别。脂肪型和少量腺体型中,腺体前部的R^{2*}值高于中央部和后部,而多量腺体型和致密型乳腺中央部的R^{2*}值高于其他两个部位,3型之间腺体各部位R^{2*}值差异无统计学意义。绝经组乳腺中央部的R^{2*}值小于月经期组,而前部和后部均大于月经期组。乳腺中央区信号增强率最小,腺体后部最大,随着R^{2*}值减小,信号增强率增加。**结论** 国人女性正常乳腺组织血氧含量变化存在一定规律。BOLD-fMRI可以监测组织氧合状态和血管功能,可为乳腺疾病的诊治提供一定的参考。

英文摘要:

Objective To observe the R^{2*} values in different ages, breast categories, and regions in normal breast of Chinese woman, and to explore whether there is correlation between R^{2*} values and blood supply. **Methods** Totally 18 BI-RADS1 women were selected and divided into 3 types according to the category of BI-RADS: Fatty and fibroglandular type (n=6), heterogeneous type (n=8) and dense type (n=4). Breast tissue was divided into 3 regions in a normal breast according to the blood supply: Central part (behind nipple and areola), anterior part and posterior part. Images were obtained with 3.0T MR system. Imaging data were processed with Functool software in AW 4.4 workstation. R^{2*} values were measured and compared among the categories of breast, between menopausal and menstrual groups, meanwhile the relationship between R^{2*} values and signal intensity increasing ratio was analyzed. **Results** R^{2*} value in central, anterior and posterior part of left breast was (64.77±17.29)Hz, (51.95±21.24)Hz and (47.41±16.18)Hz, respectively; and of right breast was (66.17±19.80)Hz, (52.48±12.21)Hz and (46.13±12.56)Hz, respectively. The differences of R^{2*} values were significant among the different regions of the ipsilateral breast. R^{2*} value of anterior part was higher than that of central and posterior part in fatty and fibroglandular types, while of central part was higher than that of other parts in heterogeneously dense and dense types. There was no significant difference in different parts among the three types. R^{2*} value of central part in menopausal group was smaller than that in menstrual group, but R^{2*} value of anterior and posterior part were higher than that in menstrual group. The signal intensity increasing ratio in central part was the minimum, but the maximum in the posterior. The signal intensity increasing ratio increased with the decrease of R^{2*} value. **Conclusion** There exist certain rule of blood oxygen content in normal breast of Chinese woman. BOLD fMRI can be used to monitor tissue oxygenation status and vascular function, which is helpful for the diagnosis, differential diagnosis and treatment of breast diseases.

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