

磁共振成像

月刊
2010年1月创刊

2021年第12卷第5期
2021年5月20日出版

刊名题写：时任第十一届全国人大常委会副委员长韩启德

主管 中华人民共和国国家卫生
健康委员会

主办
中国医院协会
首都医科大学附属北京天坛医院

顾问
刘玉清 李果珍 唐孝威
黄其鏊 苏学曾 陈星荣
闵鹏秋 高元桂 王承缘

主编 戴建平
副主编 郭启勇 祁吉 李坤成
贾文霄 赵斌 金征宇
田捷 张宝库 薛敏
卢光明 程敬亮

社长 贺光军
编辑部主任 马军
责任编辑 隋行芳
责任校对 彭如臣 顾立萍
英文编审 薛华丹 王怡宁
出版 《磁共振成像》
杂志社有限公司

国内发行 中国邮政集团公司
北京市报刊发行局
邮发代号 2-855
海外总发行 中国国际图书贸易集团公司
海外发行代号 BM 8958
印刷 北京科信印刷有限公司

邮购
磁共振成像编辑部
地址：北京市通州区玉带河东街
358号4号楼3层，邮编：101100

电话 010-67113815
E-mail editor@cjmri.cn
网址 www.chinesemri.com
定价 每册30元 全年360元

中国标准连续出版物号
ISSN 1674-8034
CN 11-5902/R

广告发布登记证号 京西市监广登字20170242号
本刊刊出的所有论文不代表本刊编委会的观点，除非特别声明

目次

论著

临床研究

磁敏感血管征对于老年恶性大脑中动脉梗死远期神经功能预后的预测价值
.....赵经纬, 吴蕾, 张少兰, 田杜雪, 隋昕, 石广志, 周建新 (1)

MRI基本征象结合ADC值鉴别垂体大腺瘤和鞍区脑膜瘤
.....韩涛, 张婧, 王丹, 张斌, 邓靓娜, 林晓强, 景梦园, 周俊林 (6)

3.0 T磁共振波谱成像联合扩散张量成像对小儿髓母细胞瘤的相关分析
.....朱凯, 曾立红, 张晓凡, 徐守成, 郝明珠, 蔡静怡 (12)

最小表观扩散系数值在评估肝细胞性肝癌侵袭性中的价值
.....景梦园, 曹云太, 邓娟, 张鹏, 张婧, 张斌, 周俊林 (16)

磁共振成像在透明细胞型肝癌诊断中的价值
.....刘斌, 杨雪, 陈枫, 孙君, 李宏军 (21)

CT和MRI对肝囊型包虫病分型与活性的评价李婷, 鲍海华 (25)

双参数磁共振成像在前列腺癌检出方面的应用——基于前列腺癌
根治术病理大切片为对照的研究
.....韩思圆, 李春媚, 刘明, 张伟, 朱锦霞, 陈敏 (30)

临床指标联合MRI评估胎盘植入高危患者术中子宫切除风险
.....钟淑媛, 丁志广, 徐坚民, 胡根文, 苏放明, 成志强 (35)

跑步相关因素对男性业余马拉松运动员大腿肌肉横截面积影响的磁共振研究
.....周静, 郑孝众, 姚婉贞, 陈磊磊, 丁建平 (40)

距骨骨软骨损伤MR T2-mapping与软骨基质金属蛋白酶-1表达的相关性研究
.....李伟, 于泽晨, 贾岩波, 于静红, 海玲, 乌日汗, 白心雨 (44)

MR T2WI单序列纹理分析对类风湿性关节炎和痛风性关节炎的鉴别诊断价值
.....刘欣, 杨海涛, 王琪琪, 周素颖, 赵洁 (50)

技术研究

集成磁共振成像技术对正常成年人海马的定量测量评估
.....吴文浩, 俞文君, 朱诞恬, 钱龙, 李绍林 (55)

经验交流

3D-pCASL及磁共振扩散峰度成像联合应用对皮质下动脉硬化性脑病的
诊断价值研究何晓一, 史浩, 王均英 (60)

MRI、脑脊液检查对颅内结核患者抗结核治疗效果的评估价值研究

……………纪俊雨, 袁帅, 申静, 赵宇明 (65)

三阴性与非三阴性乳腺癌的表观弥散系数与Ki-67指数的相关性研究

……………钱吉芳, 章蓉, 赵丽, 李芸芝, 徐生芳, 杨爱萍 (69)

扩散加权成像评估肝外胆管癌血管生成及分化程度

……………吴鑫, 黄新莽, 舒健, 苏松, 周铁军 (73)

肾透明细胞癌与肾嗜酸性细胞腺瘤的MRI纹理分析与鉴别

……………吴国华, 刘海静, 王丽坤 (77)

长骨未分化多形性肉瘤的影像学表现(附20例报告)

……………李亚宁, 姜永宏, 张玉婷, 刘正华 (81)

临床指南·专家共识

2020 SCMR 心血管磁共振临床指征专家共识解读 ……王家鑫, 杨凯, 赵世华 (85)

病例报告

硬脑膜神经鞘瘤一例 ……牟福玲, 刘显旺, 钟佳伟, 孙鹏飞 (90)

以脑膜炎为首发症状抗NMDAR脑炎一例并文献复习

……………闫瑶瑶, 宋建勋, 符念霞, 陈思静 (92)

前列腺非霍奇金淋巴瘤MRI误诊为转移瘤一例

……………马密密, 田燕, 杨浩然, 曹新山 (94)

综述

扩散张量成像和功能MRI在帕金森病脚桥核网络连接中的应用前景

……………冯芹, 白岩, 陈翰林, 张梦煊, 王梦珂, 王梅云 (96)

功能磁共振成像技术在轻微肝性脑病应用中的研究进展 ……葛岩松, 王培源 (99)

胶质瘤异柠檬酸脱氢酶基因型与影像学研究进展 ……蒋健, 张学凌, 周俊林 (103)

机器学习结合fMRI在抑郁症诊断中的研究进展 ……廖立方, 王欧成, 刘勇 (107)

基于脑fMRI技术针刺支沟穴特异性及脑网络的研究进展

……………李晓陵, 刘世平, 曹丹娜, 刘晓慧, 蔡丽娜, 姜晓旭, 崔璇,
刘潇, 王丰 (110)

MRI对肝纤维化及肝硬化定量评估的研究进展 ……刘冠辰, 刘鹏飞 (114)

化学交换饱和和转移效应量化方法的应用进展 ……窦晗, 郑阳, 王晓明 (118)

肿瘤微环境响应型¹⁹F-MR分子成像纳米探针

……………胡雪松, 卫佳楠, 王洪斌, 吴丽娜, 王凯, 孙夕林 (121)

封面文章

前列腺癌(prostate cancer, Pca)是男性最常见的恶性肿瘤,致死率排男性恶性肿瘤的第二位。随着我国人口老龄化的不断进展和前列腺特异性抗原(prostate specific antigen, PSA)筛查的普及,前列腺癌的发病率逐年上升。PSA对于前列腺癌的检出敏感度很高,但特异性较差,在前列腺炎、良性前列腺增生(benign prostatic hyperplasia, BPH)中也可能出现,PSA的假阳性会引发患者的焦虑,后续前列腺活检可能带来的术后并发症,以及对惰性前列腺癌的过度诊断及过度治疗。目前前列腺成像报告和数据系统的新版本(Prostate Imaging Reporting and Data System, PI-RADS v2)推荐使用T2加权成像(T2-weighted imaging, T2WI)、扩散加权成像(diffusion-weighted imaging, DWI)和动态对比增强成像(dynamic contrast-enhanced imaging, DCEI)对前列腺癌进行标准化评分。但DCEI扫描时间长、检查费用高且需要注射对比剂,临床应用较为受限。部分研究表明添加DCEI并没有增加前列腺MRI检查的诊断价值,选取只包含T2WI及DWI的双参数磁共振成像(biparametric magnetic resonance imaging, bpMRI)就能近似达到标准PI-RADS磁共振序列的临床诊断准确性。目前国内外的前列腺癌MRI检出研究的病理参考多为穿刺结果,但穿刺结果有一定的选择偏倚,无法全面展示每个独立病灶的详细病理信息。病理大切片将整个前列腺包埋切片,可以将每个独立病灶与MR图像进行关联,是理想的病理参考。本研究基于病理大切片结果,将bpMRI和病理大切片标出的病灶进行逐一地匹配,探索了影响前列腺癌检出的独立因素,评估了bpMRI在前列腺癌检出方面的敏感度。详见内文第30~34页。

CHINESE JOURNAL OF MAGNETIC RESONANCE IMAGING

ISSN 1674-8034, CN 11-5902/R, CODEN CCIHBW, Established in 2010 Monthly Vol 12, No 5, May 20, 2021

Responsible Institution

National Health Commission of the
People's Republic of China

Sponsor

Chinese Hospital Association
Beijing Tiantan Hospital of Capital
Medical University

International Consulting Editor

E. Mark Haacke, Ph.D. (USA)
Hedvig Hricak, M.D., Ph.D. (USA)
Jürgen Hennig, Ph.D. (USA)
Walter Kucharczyk, M.D. (CA)
William G. Bradley, Jr, M.D., Ph.D. (USA)
Zang-Hee Cho, Ph.D. (KR)

Advisory Members

LIU Yuqing LI Guozhen
TANG Xiaowei HUANG Qiliu
SU Xuezeng CHEN Xingrong
MIN Pengqiu GAO Yuanguai
WANG Chengyuan

Editor-in-Chief

DAI Jianping

Associate Editor-in-Chief

GUO Qiyong QI Ji LI Kuncheng
JIA Wen-xiao ZHAO Bin JIN Zhengyu
TIAN Jie ZHANG Baoku XUE Min
LU Guangming CHENG Jingliang

President

HE Guangjun

Editing

Editorial Office, Chinese Journal of
Magnetic Resonance Imaging

Publishing

Publishing House of Chinese Journal
of Magnetic Resonance Imaging

General Distributor

Domestic: China Post Group
Corporation Beijing Branch
Overseas: China International Book Trading
Corporation, P.O. Box 399, Beijing, China
Code No. BM 8958

Mail Order

Third Floor, Building 4, No. 358,
Yudaihe East Street, Tongzhou District,
Beijing 101100, China

Tel & Fax 8610-67113815

E-mail editor@cjmri.cn

Website www.chinesemri.com

Price: USD 30.00

Contents

ORIGINAL RESEARCH

CLINICAL ARTICLES

- 1 Predictive value of susceptibility vessel sign for long-term neurologic outcomes in elder patients with malignant middle cerebral artery infarct
ZHAO Jingwei, WU Lei, ZHANG Shaolan, TIAN Duxue, SUI Xin, SHI Guangzhi, ZHOU Jianxin
- 6 Differential diagnosis of pituitary macroadenomas and sellar meningiomas by MRI basic signs combined with ADC value
HAN Tao, ZHANG Jing, WANG Dan, ZHANG Bin, DENG Liangna, LIN Xiaoqiang, JING Mengyuan, ZHOU Junlin
- 12 Correlation analysis of 3.0 T magnetic resonance spectroscopy combined with diffusion tensor imaging in children with medulloblastoma
ZHU Kai, ZENG Lihong, ZHANG Xiaofan, XU Shoucheng, HAO Mingzhu, CAI Jingyi
- 16 The value of minimum apparent diffusion coefficient in evaluating the invasiveness of hepatocellular carcinoma
JING Mengyuan, CAO Yuntai, DENG Juan, ZHANG Peng, ZHANG Jing, ZHANG Bin, ZHOU Junlin
- 21 The value of magnetic resonance imaging in the diagnosis of clear cell hepatocellular carcinoma
LIU Bin, YANG Xue, CHEN Feng, SUN Jun, LI Hongjun
- 25 Evaluation of computer tomography and magnetic resonance imaging in the classification and viability of hepatic cystic echinococcosis
LI Ting, BAO Haihua
- 30 Application of biparametric magnetic resonance imaging in the detection of prostate cancer: a contrastive study based on whole mount section after radical prostatectomy
HAN Siyuan, LI Chunmei, LIU Ming, ZHANG Wei, ZHU Jinxia, CHEN Min
- 35 Combining clinical characteristics and specific magnetic resonance imaging features to predict the risk of hysterectomy in gravid patients at high risk for placenta accreta spectrum disorders
ZHONG Shuyuan, DING Zhiguang, XU Jianmin, HU Genwen, SU Fangming, CHENG Zhiqiang
- 40 A magnetic resonance imaging study of the influence of runner-related factors on the cross-sectional area of thigh muscles in male amateur marathon runners
ZHOU Jing, ZHENG Xiaozhong, YAO Wanzhen, CHEN Leilei, DING Jianping
- 44 The correlation between the expression of matrix metalloproteinase-1 and magnetic resonance T2-mapping in talus osteochondral injury
LI Wei, YU Zechen, JIA Yanbo, YU Jinghong, HAI Ling, WU Rihan, BAI Xinyu
- 50 Texture analysis based on MR T2WI single sequence for differentiating rheumatoid arthritis from gouty arthritis
LIU Xin, YANG Haitao, WANG Qiqi, ZHOU Suying, ZHAO Jie

TECHNICAL ARTICLE

- 55 Synthetic MRI of the hippocampal application value of normal adults
WU Wenhao, YU Wenjun, ZHU Dantian, QIAN Long, LI Shaolin

EXPERIENCE EXCHANGES

- 60 Combination of 3D-pCASL and diffusion kurtosis imaging in the diagnosis of subcortical arteriosclerotic encephalopathy
HE Xiaoyi, SHI Hao, WANG Junying

- 65 Value of MRI and cerebrospinal fluid examination in evaluating the curative effect of anti-tuberculosis treatment on patients with intracranial tuberculosis
JI Junyu, YUAN Shuai, SHEN Jing, ZHAO Yuming
- 69 Study on the correlation between MRI diffusion-weighted imaging apparent diffusion coefficient and Ki-67 index of triple negative and non-triple negative breast cancer
QIAN Jifang, ZHANG Rong, ZHAO Li, LI Yunzhi, XU Shengfang, YANG Aiping
- 73 Assessment of angiogenesis and differentiation grade of extrahepatic cholangiocarcinoma by diffusion weighted imaging
WU Xin, HUANG Xinqiao, SHU Jian, SU Song, ZHOU Tiejun
- 77 MRI texture analysis and identification of clear cell renal cell carcinoma and renal oncocytoma
WU Guohua, LIU Haijing, WANG Likun
- 81 Imaging findings of undifferentiated pleomorphic sarcoma of long bone (20 cases report)
LI Yaning, JIANG Yonghong, ZHANG Yuting, LIU Zhenghua

CLINICAL GUIDELINES & EXPERT CONSENSUS

- 85 The interpretation of 2020 SCMR position paper on clinical indications for cardiovascular magnetic resonance
WANG Jiaxin, YANG Kai, ZHAO Shihua

CASE REPORTS

- 90 Dural schwannoma: one case report
MOU Fuling, LIU Xianwang, ZHONG Jiawei, SUN Pengfei
- 92 Anti NMDAR encephalitis with meningitis as the first symptom: a case report and literature review
YAN Yaoyao, SONG Jianxun, FU Nianxia, CHEN Sijing
- 94 A case of prostate non-Hodgkin lymphoma MRI misdiagnosed as metastatic tumor
MA Mimi, TIAN Yan, YANG Haoran, CAO Xinshan

REVIEWS

- 96 Application of DTI and fMRI in the network connection of the pedunclopontine nucleus in Parkinson disease
FENG Qin, BAI Yan, CHEN Hanlin, ZHANG Menghuan, WANG Mengke, WANG Meiyun
- 99 Research progress of functional magnetic resonance imaging in minimal hepatic encephalopathy
GE Yansong, WANG Peiyuan
- 103 Research progress on isocitrate dehydrogenase genotype and imaging of glioma
JIANG Jian, ZHANG Xueling, ZHOU Junlin
- 107 Current progress of machine learning combined with functional magnetic resonance imaging in depression's diagnosis
LIAO Lifang, WANG Oucheng, LIU Yong
- 110 Research progress on the specificity and brain network of acupuncture at Zhigou acupoint based on brain fMRI technology
LI Xiaoling, LIU Shiping, CAO Danna, LIU Xiaohui, CAI Lina, JIANG Xiaoxu, CUI Xuan, LIU Xiao, WANG Feng
- 114 Progress in quantitative assessment of liver fibrosis and cirrhosis by MRI
LIU Guanchen, LIU Pengfei
- 118 The quantification methods of the confounding effects in chemical exchange saturation transfer
DOU Han, ZHENG Yang, WANG Xiaoming
- 121 Tumor microenvironment responsive ¹⁹F-MR molecular imaging nanoprobe
HU Xuesong, WEI Jianan, WANG Hongbin, WU Lina, WANG Kai, SUN Xilin

About the cover

Prostate cancer (PCA) is the most common malignancy in men, with the second fatality rate of malignancy. With the aging of China's population and the popularization of prostate specific antigen (PSA) screening, prostate cancer incidence is increasing year by year. PSA is highly sensitive to the detection of prostate cancer, but its specificity is lacking. It may also occur in prostatitis and benign prostatic hyperplasia (BPH). False positives of PSA may cause anxiety in patients, postoperative complications caused by subsequent prostate biopsy, and the overdiagnosis and overtreatment of inert prostate cancer. The new version of the current Prostate Imaging Reporting and Data System (PI-RADS v2) recommends using T2-weighted Imaging (T2WI), diffusion-weighted imaging (DWI), and dynamic contrast-enhanced imaging (DCEI) to standardized score prostate cancer. However, the clinical application of DCEI is limited due to its long scanning time, high examination cost, and the need for injection of contrast agent. Some studies have shown that adding DCEI does not increase the diagnostic value of prostate MRI. Biparametric magnetic resonance imaging (bpMRI) containing only T2WI and DWI can approximate the clinical diagnostic accuracy of standard PI-RADS magnetic resonance sequences. At present, the pathological reference of MRI detection of prostate cancer is mostly based on biopsy, but biopsy results have a particular selection bias. They can not fully display the detailed pathological information of each independent lesion. The whole-mount section, which able to correlate each lesion MR image, is an ideal pathological reference. Based on the results of the whole mount section, this study matched the lesions identified by bpMRI and the whole mount section one by one, to explore the independent factors affecting the detection of prostate cancer and evaluate the sensitivity of bpMRI in the detection of prostate cancer. See text page 30-34.