



非重症COVID-19的诊疗思考

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2020.04.25



伍连德（1879-1960）

110年前的哈尔滨鼠疫留下的经验

1910年11月9日，哈尔滨地区突发鼠疫，灾祸首发于傅家甸(今道外区)。鼠疫由沙俄西伯利亚传入满洲里，很快延及哈尔滨，危及东北全境，疫情严重，市内每天平均死亡50余人，这是发生在哈尔滨的第一次大鼠疫。

“在贝克显微镜下，伍连德清楚地看到了一种椭圆形的疫苗——正是鼠疫。伍连德立即向北京外务部发去电文，报告此事，并提出初步的防疫措施：控制铁路、公路交通，以防瘟疫蔓延；隔离疫区傅家甸；向关内征聘医生等”

伍连德大胆提出，在傅家甸流行的鼠疫无需通过动物媒介，而可以通过呼吸之间的飞沫传染，他将此命名为“肺鼠疫”。



隔绝交通，火车厢被用作隔离病房



疑似病例、轻症、重症病例分区收治



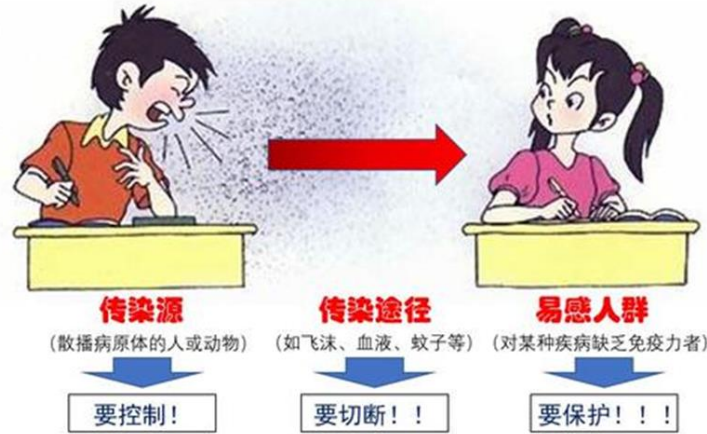
伍氏口罩，医患均佩戴，减少传染



肺鼠疫死亡患者尸体焚烧

我国COVID-19的几个时间节点

传染病流行的三个基本环节



我国两款新冠病毒灭活疫苗获得国家药品监督管理局一二期合并的临床试验许可，相关临床试验同步启动。

武汉市卫生健康委员会

市卫生健康委关于报送不明原因肺炎救治情况的紧急通知

各有关医疗机构：

根据上级紧急通知，我市华南海鲜市场陆续出现不明原因肺炎病人。为做好应对工作，请各单位立即清查统计近一周接诊过的具有类似特点的不明原因肺炎病人，于今日下午4点前将统计表（盖章扫描件）报送至市卫健委医政医管处邮箱。

联系人：毛冰 85697893 李莹 85690943
邮箱：whszyzc@126.com

附件：相关信息登记表



8名病毒性肺炎患者出院，
病原体初步判定为新型冠状病毒

来源：央视网 | 2020年01月09日 10:32

央视新闻

1月20日晚，国家卫健委高级别专家组组长、中国工程院院士钟南山接受央视新闻采访时表示：根据目前的资料，新型冠状病毒肺炎是肯定的人传人，在广东有2个病例，没去过武汉，但家人去了武汉后染上了新型冠状病毒肺炎，现在可以说，肯定的，有人传人现象。

中国工程院副院长、王辰院士
2月1日提出建设方舱医院的建议，
获得中央指导组肯定，
2月5日方舱医院正式启用

全国援助武汉抗击疫情，尤其是医护人员，一线救治病人

目前COVID-19流行病学特点

- 传染源

- 主要是新型冠状病毒感染的患者。

- 包括有肺炎和无肺炎的患者。*

- 无症状感染者也可能成为传染源。

- 包括尚未发病者和隐性感染者。*

- 传播途径

- 经呼吸道飞沫和接触传播是主要的传播途径。

- 密闭场所、长时间暴露、高浓度的环境中存在经气溶胶传播的可能。

- 应注意粪便、尿对环境污染造成经气溶胶或接触传播。

- 粪口途径无证据。*

- 易感人群：人群普遍易感。

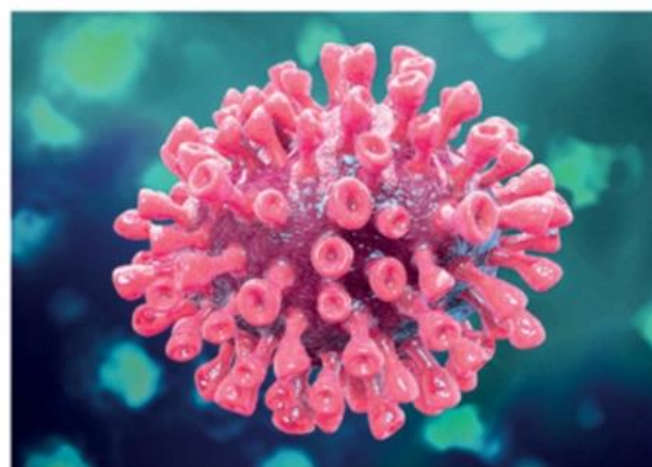
内容提要

- COVID-19 诊断和分型方法
- 非重症患者的临床特点
- 非重症转重症的危险因素和预测
- 非重症患者的系统性损害
- 非重症患者的治疗方案

THE LANCET

Volume 395, Number 10,221, Pages 311-388, February 3-7, 2020

www.thelancet.com



2019 novel coronavirus: early lessons

诊断标准

• 疑似病例

– 流行病学史

- 发病前14天内有武汉市及周边地区，或其他有病例报告社区的旅行史或居住史；
- 发病前14天内与新冠病毒感染者（核酸检测阳性者）有接触史；
- 发病前14天内曾接触过来自武汉市及周边地区，或来自有病例报告社区的发热或有呼吸道症状的患者；
- 聚集性发病（2周内小范围如家庭、办公室、学校班级等场所，出现2例及以上发热和/或呼吸道症状病例）

– 临床表现

- 发热和/或呼吸道症状；
- 具有新冠肺炎影像学特征；
- 发病早期白细胞总数正常或降低，**淋巴细胞计数正常或减少**。

早期呈现多发小斑片影及间质改变，以肺外带明显。进而发展为双肺多发磨玻璃影、浸润影，严重者可出现肺实变，胸腔积液少见。

- 有流行病学史中的任何一条，符合临床表现中任意2条。
- 无明确流行病学史的，符合临床表现中的3条。

诊断标准

• 确诊病例

疑似病例，具备以下病原学证据之一者：

- 实时荧光RT-PCR检测新型冠状病毒核酸阳性；
- 病毒基因测序，与已知的新型冠状病毒高度同源。
- 血清新型冠状病毒特异性IgM抗体和IgG抗体阳性；
- 血清新型冠状病毒特异性IgG抗体由阴性转为阳性或恢复期较急性期4倍及以上升高。
- *血清学作为确诊标准的意义还有待于更多的临床数据验证。*

关注病原学相关检查

- **病原学检查：**采用RT-PCR或/和NGS方法在鼻咽拭子、痰和其他下呼吸道分泌物、血液、粪便等标本中可检测出新冠病毒核酸。
检测**下呼吸道标本**（痰或气道抽取物）更加准确（**病毒载量最高**）。
- **血清学检查：**新冠病毒特异性IgM抗体多在发病3-5天后开始出现阳性，IgG抗体滴度恢复期较急性期有4倍及以上增高。

咽拭子采样智能机器人项目： 广州呼吸研究院钟院士团队、沈阳自动化研究所刘浩教授团队



该机器人系统于2月28日于我院正式开始受试者的检测。至今已开展首期20例受试者的临床试验，采集样本80份。细胞学检测结果显示机器人咽拭子采样可以达到较高的质量，一次成功率大于95%，能够利用低于医务人员平均操作力量实现有效的采样且采样力度均匀，受试者咽部均无红肿、出血等不良反应。该项研究聚焦于与人体组织直接接触的操作型机器人，可避免医务人员感染、提升生物样本采集的规范性、保证标本质量。

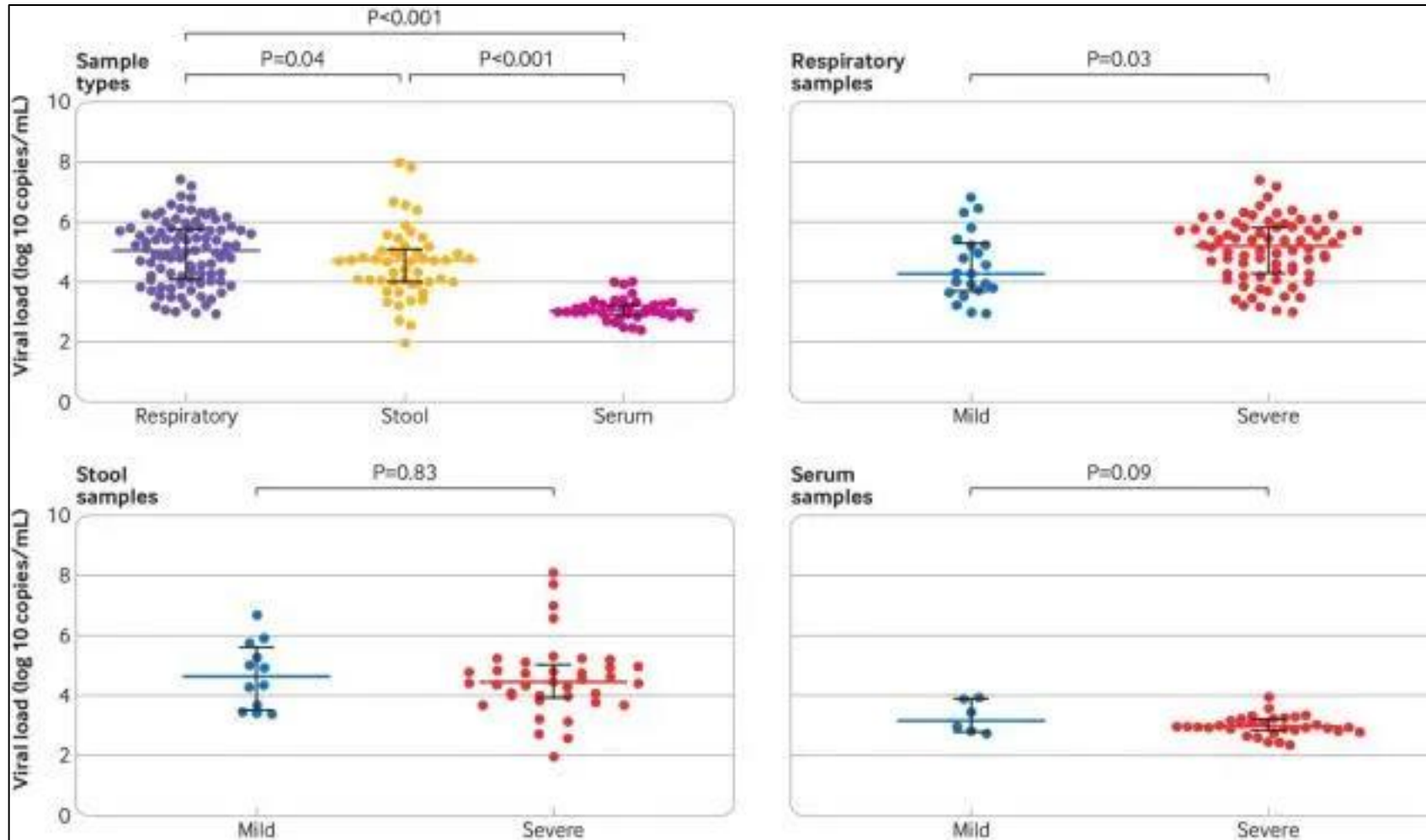
用于新冠肺炎诊疗的支气管手术机器人完成首次人体试验

上海胸科医院孙加源教授团队联合微创（上海）医疗机器人有限公司



需要思考如何实现机器人的临床可行性

不同种类组织样本和不同严重程度患者中病毒载量比较



不同种类组织样本和不同严重程度患者中病毒载量比较

BMJ 2020;369:m1443 | doi: 10.1136/bmj.m1443

nature
medicine

BRIEF COMMUNICATION

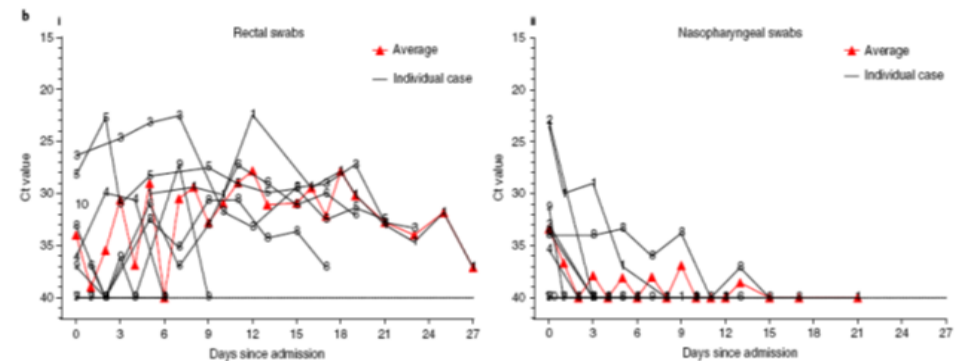
<https://doi.org/10.1038/s41591-020-0817-4>

Check for updates

Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding

Yi Xu^{1,11}, Xufang Li^{1,11}, Bing Zhu^{2,11}, Huiying Liang^{3,4,11}, Chunxiao Fang¹, Yu Gong¹, Qiaozhi Guo⁵, Xin Sun⁵, Danyang Zhao⁵, Jun Shen¹, Huayan Zhang^{1,4,6}, Hongsheng Liu⁷, Huimin Xia^{3,4,8}, Jinling Tang^{3,4}, Kang Zhang^{8,9,10} and Sitang Gong^{1,4}

We report epidemiological and clinical investigations on ten pediatric SARS-CoV-2 infection cases confirmed by real-time reverse transcription PCR assay of SARS-CoV-2 RNA. Symptoms in these cases were nonspecific and no children required respiratory support or intensive care. Chest X-rays lacked definite signs of pneumonia, a defining feature of the infection in adult cases. Notably, eight children persistently tested positive on rectal swabs even after nasopharyngeal testing was negative, raising the possibility of fecal-oral transmission.



粪便中病毒的持续时间长，呼吸道样本病毒载量最高
呼吸道样本阴性患者，复查粪便中病毒RNA？
粪便引发传播的风险需要评价，手卫生重要性又凸显

LETTER

 OPEN ACCESS
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Detectable 2019-nCoV viral RNA in blood is a strong indicator for the further clinical severity

Weilie Chen*, Yun Lan*, Xiaozhen Yuan*, Xilong Deng*, Yueping Li*, Xiaoli Cai, Liya Li, Ruiying He, Yizhou Tan, Xizi Deng, Ming Gao, Guofang Tang, Lingzhai Zhao, Jinlin Wang, Qinghong Fan, Chunyan Wen, Yuwei Tong, Yangbo Tang, Fengyu Hu, Feng Li and Xiaoping Tang

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ABSTRACT

The novel coronavirus (2019-nCoV) infection caused pneumonia. we retrospectively analyzed the virus presence in the pharyngeal swab, blood, and the anal swab detected by real-time PCR in the clinical lab. Unexpectedly, the 2109-nCoV RNA was readily detected in the blood (6 of 57 patients) and the anal swabs (11 of 28 patients). Importantly, all of the 6 patients with detectable viral RNA in the blood cohort progressed to severe symptom stage, indicating a strong correlation of serum viral RNA with the disease severity (p -value = 0.0001). Meanwhile, 8 of the 11 patients with annal swab virus-positive was in severe clinical stage. However, the concentration of viral RNA in the anal swab (Ct value = 24 + 39) was higher than in the blood (Ct value = 34 + 39) from patient 2, suggesting that the virus might replicate in the digestive tract. Altogether, our results confirmed the presence of virus RNA in extra-pulmonary sites.

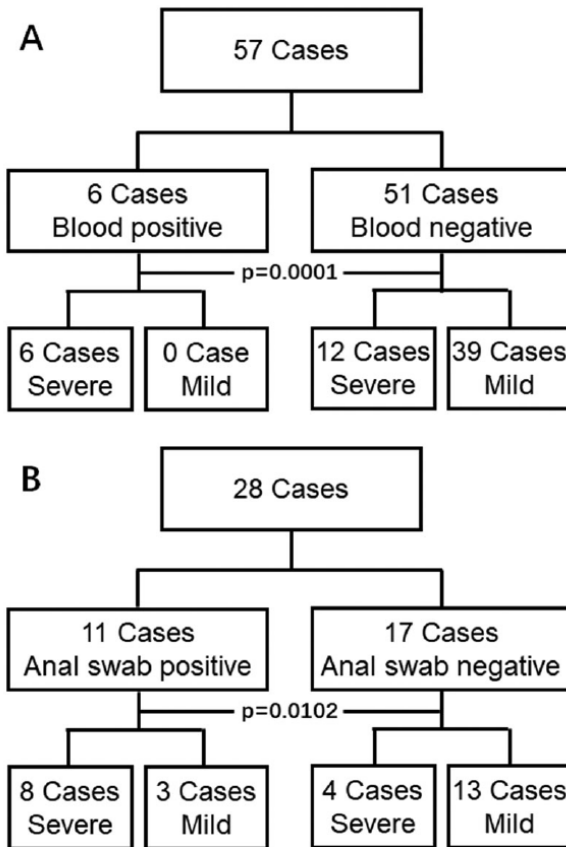


Figure 1. Results of 2019-nCoV viral RNA detection in the blood (A) and anal swab (B). Blood or anal swab positive represents viral RNA positive in at least one test of blood or anal swab samples from the same patient. Blood or anal swab negative represents viral RNA negative in all tests of blood or anal swab samples from the same patient. Severe represents that the patient is diagnosed as a severe symptom after expert consultation while mild represents the rest of the patients. P values are shown (chi-square test, two sides).

新型冠状病毒可在肺外被检测到，
 但其与疾病严重程度相关性不明确
 有待进一步评价

关注病原学相关检查



新冠病毒相关实验室结果解读



客观对待 科学解释

Journal Pre-proof



Serological immunochromatographic approach in diagnosis with SARS-CoV-2 infected COVID-19 patients

Yunbao Pan, Xinran Li, Gui Yang, Junli Fan, Yueting Tang, Jin Zhao, Xinghua Long, Shuang Guo, Ziwu Zhao, Yinjuan Liu, Hanning Hu, Han Xue, Yirong Li

PII: S0163-4453(20)30175-4
DOI: <https://doi.org/10.1016/j.jinf.2020.03.051>
Reference: YJINF 4525

To appear in: *Journal of Infection*

Accepted date: 26 March 2020

Table 2. Detection capability of viral IgM or IgG in real-time RT-PCR negative patients

Disease duration	No. of sample	IgM+ No. (% , 95% CI)	IgG+ No. (% , 95% CI)	IgM+ or IgG+ No. (% , 95% CI)
1-7 days	9	2 (22.2, 3.9-59.8)	4 (44.4, 15.3-77.3)	4 (44.4, 15.3-77.3)
8-14 days	6	2 (33.3, 6.0-75.9)	4 (66.7, 24.1-94.0)	5 (83.3, 36.5-99.1)
≥15 days	7	4 (57.1, 20.2-88.2)	5 (71.4, 30.3-94.9)	5 (71.4, 30.3-94.9)
In total	22	8 (36.4, 18.0-59.2)	13 (59.1, 36.7-78.5)	14 (63.6, 40.8-82.0)

The number of positive cases were shown here in accompany with percentages and 95% CI values. CI, confidence interval.

**IgM, IgG定性分析有补充诊断的价值，
但所选试剂盒的可靠性应注意评价**

Table 3. IgG detection concordance between whole blood and plasma samples

		Serum/Plasma		In total
		+	-	
Whole Blood	+	23	0	23
	-	1	10	11
In total		24	10	34
Cohen's kappa coefficient		0.93 (95% CI, 0.80-1.06; P-value, <0.000)		

CI, confidence interval.

临床分型

- 轻型

- 临床症状轻微，影像学未见肺炎表现。

- 约占5%，应注意在发病早期诊断的此型患者，随着病程延长，病情有可能会进展。

- 普通型

- 具有发热、呼吸道等症状，影像学可见肺炎表现。

- 普通型即为该病最为常见的类型。约占75%。

胸部影像学是重要的临床分型工具之一，尤其胸部CT
重视预测和监测病情的演变（“轻转重”）

临床分型

- **重型** (约占15%)
 - 出现以下情况之一者
 - 出现气促, $RR \geq 30$
 - 静息状态下, 指氧
 - 动脉血氧分压 (PaO_2)
($1\text{mmHg}=0.133\text{kPa}$)。
 - 高海拔 (海拔超过1000米) 地区应根据以下公式对 PaO_2/FiO_2 进行校正: $PaO_2/FiO_2 \times [\text{大气压}(\text{mmHg})/760]$ 。
 - 肺部影像学显示24-48小时内病灶明显进展>50%者按重型管理。
- **危重型** (约占5%)
 - 符合下列任一条:
 - 呼吸衰竭, 且需要机械通气;
 - 出现休克;
 - 合并其他器官功能衰竭需ICU监护治疗。

胸部CT的自动定量分析对临床转归预测是否优于半定量视觉评分

临床分型

- 重型（儿童）

- 符合下列任何一条：

- 出现气促（<2月龄，RR≥60次/分；2~12月龄，RR≥50次/分；1~5岁，RR≥40次/分；>5岁，RR≥30次/分），除外发热和哭闹的影响；
 - 静息状态下，指氧饱和度≤92%；
 - 辅助呼吸（呻吟、鼻翼扇动、三凹征），发绀，间歇性呼吸暂停；
 - 出现嗜睡、惊厥；
 - 拒食或喂养困难，有脱水征。

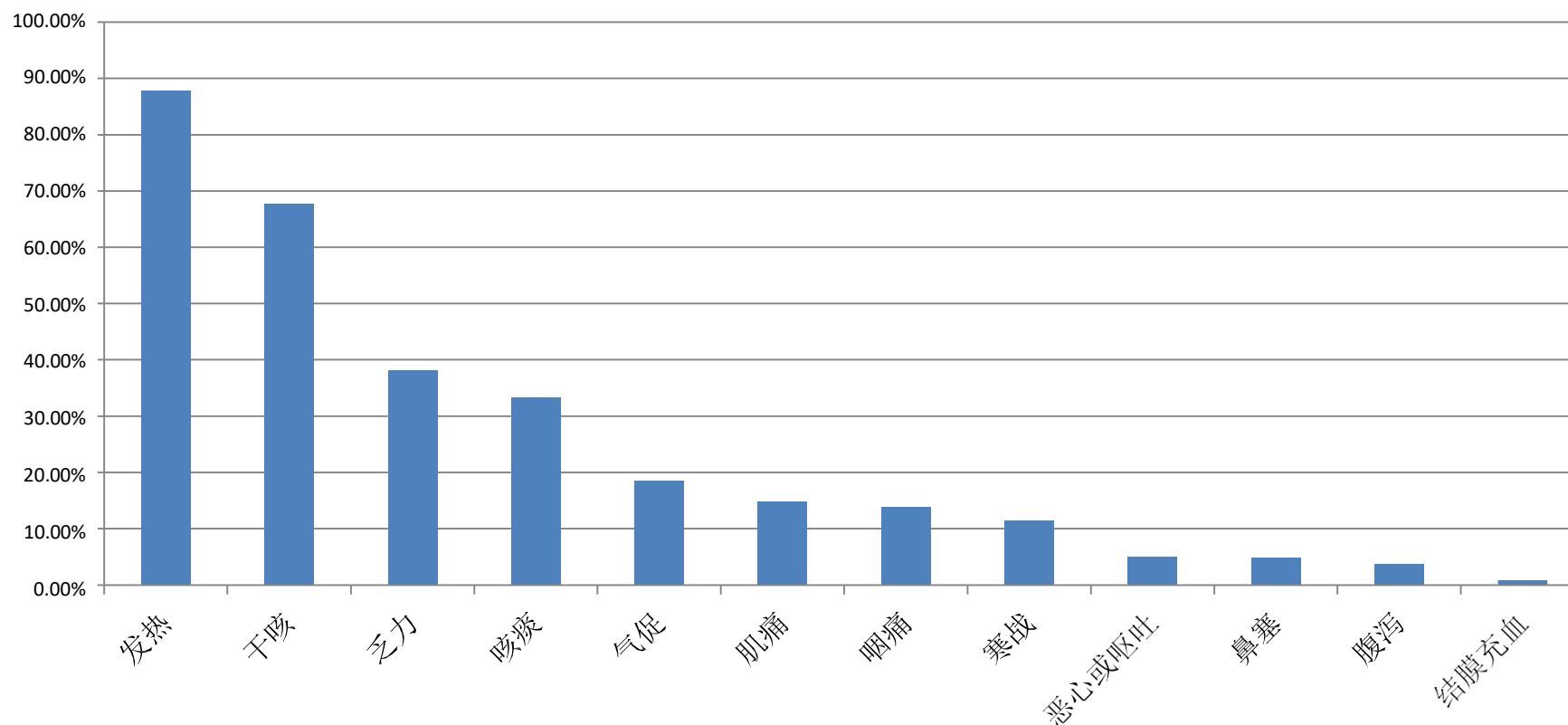
- 发生率较低。

COVID-19临床特点

- 临床表现

- 以发热、干咳、乏力为主要表现。少数病例伴有鼻塞、流涕、咽痛和腹泻等症状。
 - 多以发热起病，中低热者比例较高；持续高热者病情重。
- 值得注意：部分重症患者病程中可为中低热，甚至无明显发热。
- 重症患者多在一周后出现呼吸困难和/或低氧血症。
 - 应密切观察病情，尽早发现重症病例，早期干预，阻断病情进展；极期多在9-12天。
- 严重者快速进展为急性呼吸窘迫综合征、脓毒症休克、难以纠正的代谢性酸中毒和出凝血功能障碍。
- 一起15例聚集发病：12例肺炎（发热4例，无症状5例，10例淋巴细胞正常），3例无症状无肺炎。

新冠肺炎临床症状（55924例）



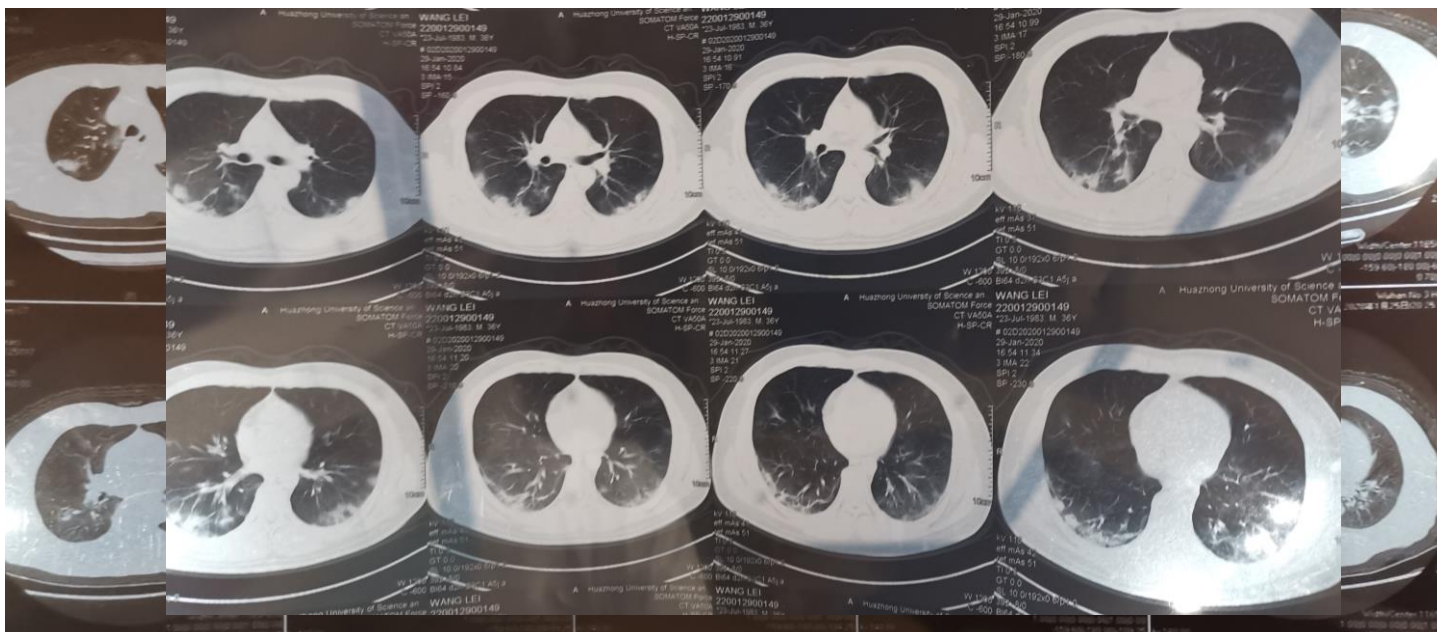
摘自中国-WHO新冠肺炎联合考察报告（2020-2）

如果大规模筛查无症状感染者可能使症状的比例有所下降

临床特点

- 胸部影像学

- 早期呈现多发小斑片影及间质改变，以肺外带明显。进而发展为双肺多发磨玻璃影、浸润影，严重者可出现肺实变，胸腔积液少见。（影像学特点不一定特异，不能脱离临床背景分析）
- 有利于疑诊病例筛查和确诊病例的分层



Radiology

Frequency and Distribution of Chest Radiographic Findings in COVID-19 Positive

Patients

Summary Statement

Chest x-ray abnormalities in COVID-19 mirror those of CT, demonstrating bilateral peripheral consolidation. Chest x-ray findings have a lower sensitivity than initial RT-PCR testing (69% versus 91%, respectively).

Key Results

- In a cohort of patients with COVID-19 infection and imaging follow-up, baseline chest x-ray had a sensitivity of 69%, compared to 91% for initial RT-PCR.
- Chest x-ray abnormalities preceded positive RT-PCR in 6/64 (9%) patients.
- Common chest x-ray findings mirror those previously described for CT: bilateral, peripheral, consolidation and/or ground glass opacities.

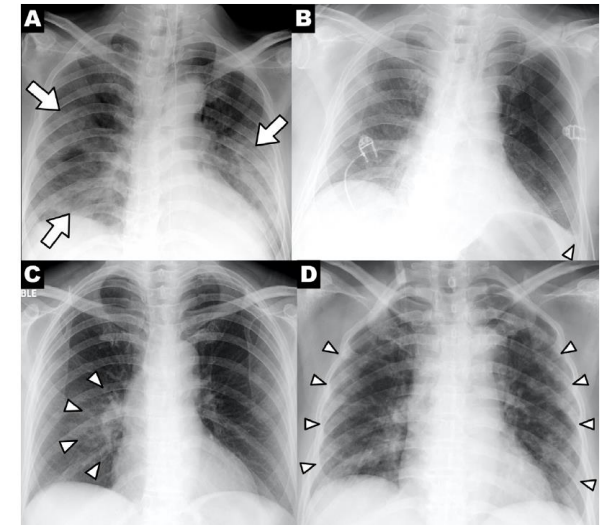


Figure 3. Chest x-ray findings in COVID-19: (A) patchy consolidations, (B) pleural effusion, (C) perihilar distribution, and (D) peripheral distribution.

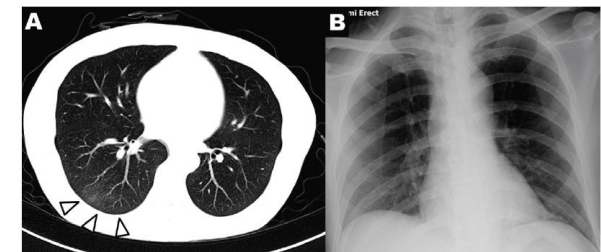


Figure 6. Ground glass opacities seen on computed tomography in a patient with COVID-19 (Image A) but not visible on CXR (Image B).

胸片异常的分布特征与CT类似，其易实施，但诊断灵敏度差



Imaging and clinical features of patients with 2019 novel coronavirus SARS-CoV-2

Xi Xu¹ · Chengcheng Yu² · Jing Qu² · Lieguang Zhang² · Songfeng Jiang² · Deyang Huang² · Bihua Chen² · Zhiping Zhang² · Wanhua Guan² · Zhoukun Ling² · Rui Jiang² · Tianli Hu² · Yan Ding² · Lin Lin² · Qingxin Gan² · Liangping Luo¹ · Xiaoping Tang² · Jinxin Liu²

Received: 10 February 2020 / Accepted: 19 February 2020
© Springer-Verlag GmbH Germany, part of Springer Nature 2020

Abstract

Background The pneumonia caused by the 2019 novel coronavirus (SARS-CoV-2, also called 2019-nCoV) recently break out in Wuhan, China, and was named as COVID-19. With the spread of the disease, similar cases have also been confirmed in other regions of China. We aimed to report the imaging and clinical characteristics of these patients infected with SARS-CoV-2 in Guangzhou, China. **Methods** All patients with laboratory-identified SARS-CoV-2 infection by real-time polymerase chain reaction (PCR) were collected between January 23, 2020, and February 4, 2020, in a designated hospital (Guangzhou Eighth People's Hospital). This analysis included 90 patients (39 men and 51 women; median age, 50 years (age range, 18–86 years)). All the included SARS-CoV-2-infected patients underwent non-contrast enhanced chest computed tomography (CT). We analyzed the clinical characteristics of the patients, as well as the distribution characteristics, pattern, morphology, and accompanying manifestations of lung lesions. In addition, after 1–6 days (mean 3.5 days), follow-up chest CT images were evaluated to assess radiological evolution.

Findings The majority of infected patients had a history of exposure in Wuhan or to infected patients and mostly presented with fever and cough. More than half of the patients presented bilateral, multifocal lung lesions, with peripheral distribution, and 53 (59%) patients had more than two lobes involved. Of all included patients, COVID-19 pneumonia presented with ground glass opacities in 65 (72%), consolidation in 12 (13%), crazy paving pattern in 11 (12%), interlobular thickening in 33 (37%), adjacent pleura thickening in 50 (56%), and linear opacities combined in 55 (61%). Pleural effusion, pericardial effusion, and lymphadenopathy were uncommon findings. In addition, baseline chest CT did not show any abnormalities in 21 patients (23%), but 3 patients presented bilateral ground glass opacities on the second CT after 3–4 days.

Conclusion SARS-CoV-2 infection can be confirmed based on the patient's history, clinical manifestations, imaging characteristics, and laboratory tests. Chest CT examination plays an important role in the initial diagnosis of the novel coronavirus pneumonia. Multiple patchy ground glass opacities in bilateral multiple lobular with periphery distribution are typical chest CT imaging features of the COVID-19 pneumonia.

Eur J Nucl Med Mol Imaging

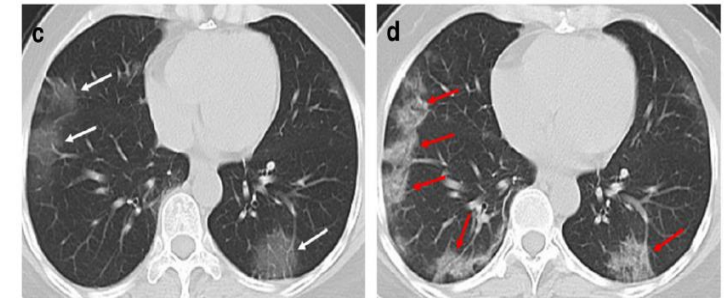
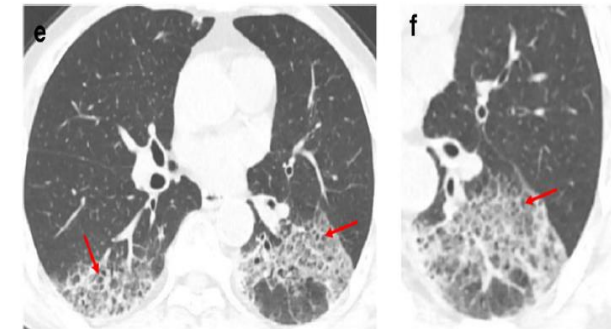
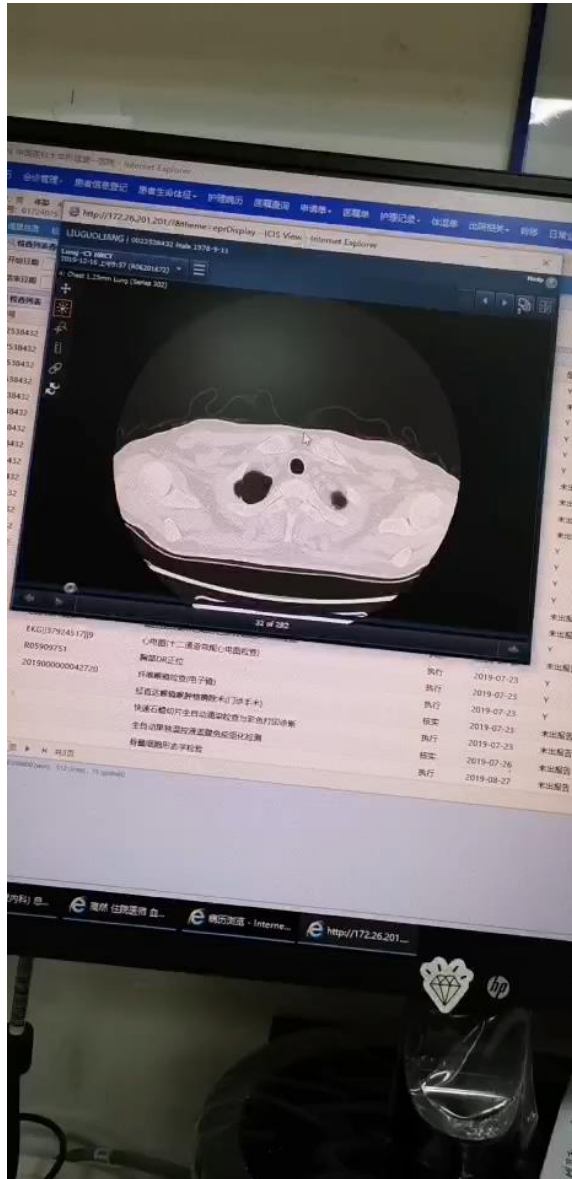


Fig. 2 A 49-year-old woman with history of recent travel to Wuhan, presented with fever and cough for 8 days. **a** Non-contrast enhanced chest CT demonstrated multiple ground glass opacification in the both lower lobes (white arrows). **b** After 4 days, the follow-up CT scan showed enlarged lesions and increased density of the lesions compared with previous images, indicating disease progression (red arrows)

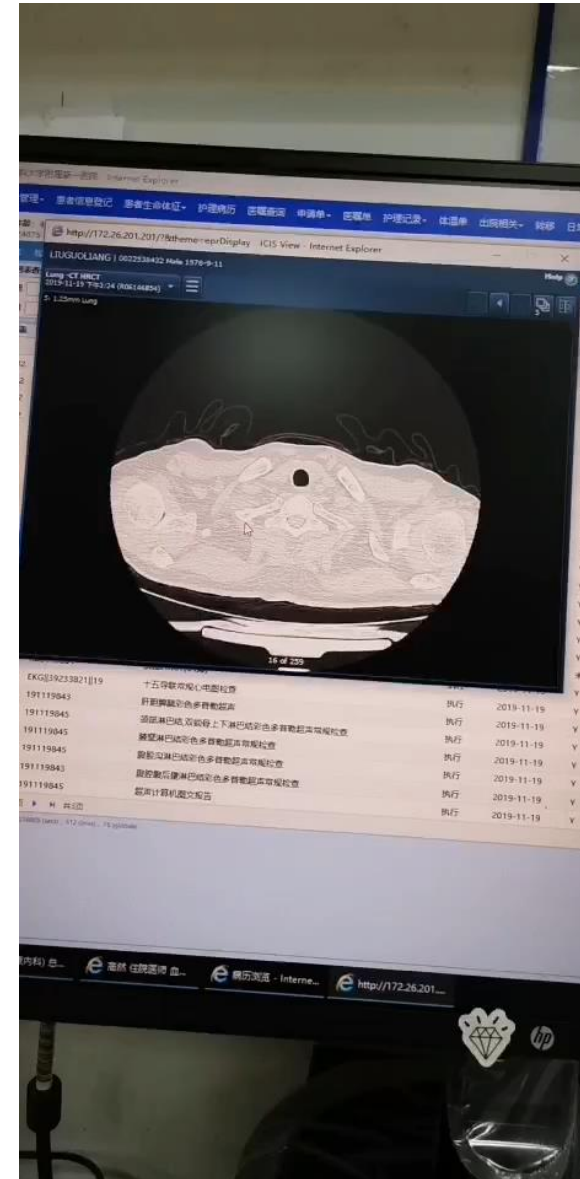
Fig. 3 A 62-year-old man with a history of exposure to a market in Guangzhou, presented with fever and cough for 11 days. **a, b** Non-contrast enhanced chest CT showed multiple ground glass opacification in the both lower lobes and thickening of the adjacent pleura. The interlobular septal thickening in regions of ground glass opacification, representing crazy paving pattern (red arrows)



双肺周边分布的多发磨玻璃影
是COVID-19典型影像学表现



注意同像异病



NK T细胞淋巴瘤

鉴别诊断

- 轻型表现需与其它病毒引起的上呼吸道感染相鉴别。
- 新冠病毒肺炎主要与流感病毒、腺病毒、呼吸道合胞病毒等其他已知病毒性肺炎 及肺炎支原体感染鉴别，尤其是对疑似诊断病例要尽可能采取包括快速抗原检测 和多重**PCR**核酸检测等方法，对常见呼吸道病原体进行检测。
应意识到存在混合感染、继发感染（包括医院感染）
- 还要与非感染性疾病，如血管炎、皮炎和机化性肺炎等鉴别。

Radiology

Performance of radiologists in differentiating COVID-19 from viral pneumonia on chest CT

Performance of radiologists in differentiating COVID-19 from viral pneumonia on chest CT

Summary: Radiologists had high specificity but moderate sensitivity in differentiating COVID-19 from viral pneumonia on chest CT.

Key Results:

- Three Chinese radiologists had sensitivities of 72%, 72% and 94% and specificities of 94%, 88% and 24% in differentiating 219 COVID-19 from 205 non-COVID-19 pneumonia.
- Four United States radiologists had sensitivities of 93%, 83%, 73% and 73% and specificities of 100%, 93%, 93% and 100%.
- The most discriminating features for COVID-19 pneumonia included a peripheral distribution (80% vs. 57%, $p < 0.001$), ground-glass opacity (91% vs. 68%, $p < 0.001$) and vascular thickening (58% vs. 22%, $p < 0.001$).

不同放射线医师依据胸部CT鉴别COVID-19与其他肺炎的能力不同

AI能力如何？

Radiology

Artificial Intelligence Distinguishes COVID-19 from Community Acquired Pneumonia on Chest CT

Lin Li^{*1a,1b}, Lixin Qin^{*2}, Zeguo Xu^{1a}, Youbing Yin³, Xin Wang³, Bin Kong³, Junjie Bai³, Yi Lu³, Zhenghan Fang³, Qi Song³, Kunlin Cao³, Daliang Liu⁴, Guisheng Wang⁵, Qizhong Xu⁶, Xisheng Fang^{1a}, Shiqin Zhang^{1a}, Juan Xia^{1a}, Jun Xia^{*6}

如何在相似中找不同是AI更重要的意义
此研究CAP中病毒肺炎比例不清楚

Key Results:

A deep learning method was able to identify COVID-19 on chest CT exams (area under the receiver operating characteristic curve, 0.96).

A deep learning method to identify community acquired pneumonia on chest CT exams (area under the receiver operating characteristic curve, 0.95).

There is overlap in the chest CT imaging findings of all viral pneumonias with other chest diseases that encourages a multidisciplinary approach to the final diagnosis used for patient treatment.

Summary Statement:

Deep learning detects coronavirus disease 2019 (COVID-19) and distinguish it from community acquired pneumonia and other non-pneumonic lung diseases using chest CT.

Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases

Tao Ai MD, PhD^{1*}, Zhenlu Yang MD, PhD^{1*}, Hongyan Hou, MD², Chenao Zhan MD¹,
Chong Chen MD¹, Wenzhi Lv³, Qian Tao, PhD⁴, Ziyong Sun MD², Liming Xia MD, PhD¹

Performance of chest CT in diagnosing COVID-19

There were 888 patients with positive chest CT findings (< 60 years, n = 587; ≥ 60 years, n = 301; 420 men and 468 women). With RT-PCR results as reference, the sensitivity, specificity, accuracy of chest CT in indicating COVID-19 infection were 97% (95% CI 95-98%, 580/601 patients), 25% (95% CI 22-30%, 105/413 patients) and 68% (95%CI 65-70%, 685/1014 patients), respectively.

灵敏度=真阳/(真阳+假阴)

特异度=真阴/(真阴+假阳)

人工阅片诊断COVID-19的

高灵敏度，低特异度

宜以CT作为临床诊断工具，加强核酸反复确认

Key Points

1. The positive rates of RT-PCR assay and chest CT imaging in our cohort were 59% (601/1014), and 88% (888/1014) for the diagnosis of suspected patients with COVID-19, respectively.
2. With RT-PCR as a reference, the sensitivity of chest CT imaging for COVID-19 was 97% (580/601). In patients with negative RT-PCR results but positive chest CT scans (n=308 patients), 48% (147/308) of patients were re-considered as highly likely cases, with 33% (103/308) as probable cases by a comprehensive evaluation.
3. With analysis of serial RT-PCR assays and CT scans, 60% to 93% of patients had initial positive chest CT consistent with COVID-19 before the initial positive RT-PCR results. 42% of patients showed improvement of follow-up chest CT scans before the RT-PCR results turning negative.

Summary Statement

Chest CT had higher sensitivity for diagnosis of COVID-19 as compared with initial reverse-transcription polymerase chain reaction (RT-PCR) from swab samples in the epidemic area of China.

Radiology

Time Course of Lung Changes On Chest CT During Recovery From 2019 Novel Coronavirus (COVID-19) Pneumonia

Feng Pan, MD^{*1,2}, Tianhe Ye, MD^{*1,2}, Peng Sun, MD³, Shan Gui^{1,2}, Bo Liang, MD^{1,2}, Lingli Li, MD^{1,2}, Dandan Zheng, PhD⁴, Jiazheng Wang, PhD⁴, Richard L. Hesketh, MD, PhD⁵, Lian Yang, MD^{1,2}, Chuansheng Zheng, MD, PhD^{1,2}.

Summary Statement

In patients recovering from COVID-19 infection, four stages of evolution on chest CT were identified: early stage (0-4 days); progressive stage (5-8 days); peak stage (10-13 days); and absorption stage (≥ 14 days).

Key Results

1. In patients who recovered from COVID-19 pneumonia, initial lung findings on chest CT were small subpleural ground glass opacities (GGO) that grew larger with crazy-paving pattern and consolidation.
2. Lung involvement increased to consolidation up to two weeks after disease onset.
3. After two weeks, the lesions were gradually absorbed leaving extensive GGO and subpleural parenchymal bands.

康复者的胸部影像学吸收时间一般超过2周

Radiology

Well-aerated Lung on Admitting Chest CT to Predict Adverse Outcome in COVID-19 Pneumonia

Davide Colombi, MD¹; Flavio C. Bodini, MD¹; Marcello Petrini, MD¹; Gabriele Maffi, MD¹; Nicola Morelli, MD¹; Gianluca Milanese, MD²; Mario Silva, MD, PhD²; Nicola Sverzellati, MD, PhD, Prof.²; Emanuele Michieletti, MD¹

Summary Statement

Visual and software-based quantification of well aerated lung parenchyma on admission chest CT were predictors of intensive care unit (ICU) admission or death in patients with COVID-19 pneumonia.

视觉评分法和软件自动测算结果相似，

其他特征的定量分析或AI深度学习会带来新的预测因子吗？

Key Results

- Patients with COVID-19 pneumonia at baseline chest CT who had ICU admission or who died had 4 or more lobes of the lung affected compared to patients without ICU admission or death (16% versus 6% of patients, $p < .04$).
- After adjustment for patient demographics and clinical parameters, visually assessed well aerated lung parenchyma on admission on chest CT less than 73% was associated with ICU admission or death (OR 5.4, $p < .001$); software methods for lung quantification showed similar results.

非重症转重症的危险因素和预测因子

- 成人

- 外周血淋巴细胞进行性下降;
- 外周血炎症因子如IL-6、C反应蛋白进行性上升;
- 乳酸进行性升高;
- 肺内病变在短期内迅速进展。

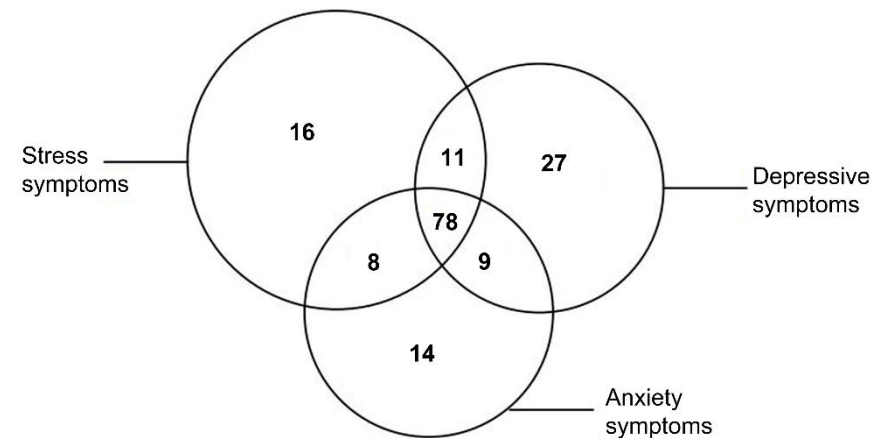
- 儿童

- 呼吸频率增快;
- 精神反应差、嗜睡;
- 乳酸进行性升高;
- 影像学显示双侧或多肺叶浸润、胸腔积液或短期内病变快速进展;
- 3月龄以下的婴儿或有基础疾病（先天性心脏病、支气管肺发育不良、呼吸道畸形、异常血红蛋白、重度营养不良等）、有免疫缺陷或低下（长期使用免疫抑制剂）。

非重症患者的系统性损害

A survey of immediate psychological distress in patients with mild Coronavirus Disease 2019 (unpublished data)

Results: A total of 269 patients with mild COVID-19 received the questionnaires, and 91.1% patients (median age 47 years old; 154 women) completed the questionnaires. According to the HADS-D (≥ 8) and PHQ-9 (≥ 5) scores, 28.8% and 55.8% of mild COVID-19 patients, respectively, had depressive symptoms. According to the HADS-A (≥ 8) and GAD-7 (≥ 5) scores, 32.1% and 49.8% of mild COVID-19 patients had anxiety symptoms. Based on the IES-R total score ≥ 25 , 50.9% of participants had moderate or severe stress symptoms. It was found that age ≥ 55 , worrying about sequelae of COVID-19, a duration of hospitalization ≥ 14 days or having family members killed by COVID-19 were significantly associated with depressive symptoms. Patients who were aged ≥ 55 years, married, or worried about sequelae of COVID-19 or the family financial burden were much more likely to have anxiety symptoms. Patients who were female, were married, had chronic diseases, had family members killed by COVID-19 or were worried about the family financial burden were much more likely to have acute stress symptoms.



非重症患者器质性损伤相对轻，易恢复；
但精神心理创伤隐匿，且发病率高，应重视

非重症患者的治疗方案

一般治疗

- 卧床休息，支持治疗，保证充分热量；注意水、电解质平衡，维持内环境稳定；监测生命体征、指氧饱和度等。
- 根据病情监测血常规、尿常规、C反应蛋白、生化指标（肝酶、心肌酶、肾功能等）、凝血功能，必要时行动脉血气分析，胸部影像学。有条件者可检测细胞因子。
- 及时给予有效氧疗措施，包括鼻导管、面罩给氧和经鼻高流量湿化氧疗。

非重症患者的治疗方案

- 抗病毒治疗：
 - 可试用 α -干扰素、洛匹那韦/利托那韦、利巴韦林（建议与干扰素或洛匹那韦/利托那韦联合应用）、磷酸氯喹（*18-65岁成人、疗程7天*）、阿比多尔。疗程不超过10天。
 - *目前没有确认有效的抗病毒治疗方法。若试用时，建议在早期使用。*
 - 要注意上述药物的不良反应、禁忌症和其它药物的相互作用。
 - 在临床应用中进一步评价目前所试用药物的疗效。
 - 不建议同时应用3种及以上抗病毒药物；出现不可耐受的毒副作用时应停止使用相关药物。
 - *对孕产妇患者的治疗应考虑妊娠周数，尽可能选择对胎儿影响较小的药物，以及是否终止妊娠后再进行治疗的问题，并知情告知。*
- 抗菌药物治疗：避免盲目或不恰当使用抗菌药物，尤其是联合使用广谱抗菌药物
- *对于病毒性疾病的治疗，还应注意治疗从简，不可过度治疗。*

非重症患者的呼吸康复治疗



FET Data C 官方网站 搜索引擎 投稿系统 杂志

国家全民健康保障信息平台
医学研究登记备案信息系统

侯刚
中国医科大学附属第一医院

项目备案

筛选条件

项目来源: 本机构项目 分中心项目

项目类型: 全部 干细胞临床研究项目 体细胞临床研究项目 临床研究项目

+ 研究项目

项目名称	项目状态	最近更新时间	操作
评估互联网辅助下呼吸康复对新型冠状病毒肺炎患者的临床干预效果的随机对照研究	已公示	2020-03-14 13:50:40	详情
评估预测轻症新型冠状病毒肺炎患者疾病转归的预测模型的效能——一项回顾性研究	已公示	2020-03-14 13:49:16	详情

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