武汉19-nCoV
肺炎影像学表现初探

武汉协和医院放射科
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2020.1.22

背景

- 2019年12月起，湖北省武汉市陆续出现不明原因肺炎的病例。
- 2020年1月7号，经病毒分型检测为一种新型冠状病毒（2019-nCOV）
- 截止2020.1.22 7:00 我国确诊324例，死亡6例，其中武汉市270例，其余地区病例几乎均为武汉输入型病例
- 与华南市场接触史相关，已确认人传人

WHO诊断标准

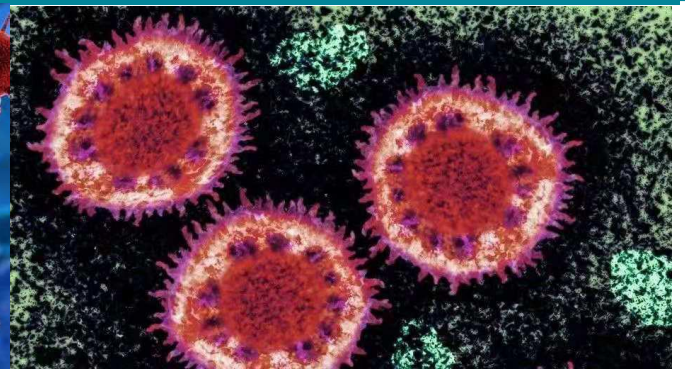
- On 12 January 2020 Frist Edition

Table 1. Definitions of patients with SARI, suspected of nCoV*

SARI	An ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization.[5] However, the absence of fever does NOT exclude viral infection.[6]
Surveillance case definitions for nCoV*	1. Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation[1] (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised); AND any of the following: a) A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; or b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or c) the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation. 2. A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures: a) close physical contact[2] with a confirmed case of nCoV infection, while that patient was symptomatic; or b) a healthcare facility in a country where hospital-associated nCoV infections have been reported;

目的

- 2019-nCoV感染者临床与影像学表现虽具有一定特征，但尚无大样本或阶段性总结
- “春运”有可能导致全国范围内疫情爆发
- 及时明确此类患者的临床与影像资料可为临床早诊断、及时隔离与治疗提供参考，改善患者预后



一、冠状病毒病原学特点

- 单股正链RNA病毒
- 电子显微镜下可观察到其外膜上有明显的棒状粒子突起，形态似皇冠，故名
- 除人类外，还可感染猪、牛、猫、犬、貂、骆驼、蝙蝠、老鼠、刺猬等多种哺乳动物以及多种鸟类
- 目前已知的人类冠状病毒共六种。其中四种在人群中较为常见，致病性较低，一般仅引起类似普通感冒的轻微呼吸道症状。另外两种冠状病毒——严重急性呼吸综合征冠状病毒（SRAS）和中东呼吸综合征冠状病毒（MERS），可引起严重的呼吸系统疾病
- 引起此次疫情的新型冠状病毒（2019-nCoV）不同于以往已发现的人类冠状病毒

二、2019-nCoV

- 新型冠状病毒属于Beta冠状病毒
- SARS/类SARS冠状病毒的共同祖先是与HKU9-1类似的病毒
- 自然宿主可能是蝙蝠
- 通过S-蛋白与人ACE2互作的分子机制，来感染人的呼吸道上皮细胞，故武汉冠状病毒有很强的对人感染能力

SCIENCE CHINA
Life Sciences

•LETTER TO THE EDITOR•

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Evolution of the novel coronavirus from the ongoing Wuhan outbreak and modeling of its spike protein for risk of human transmission

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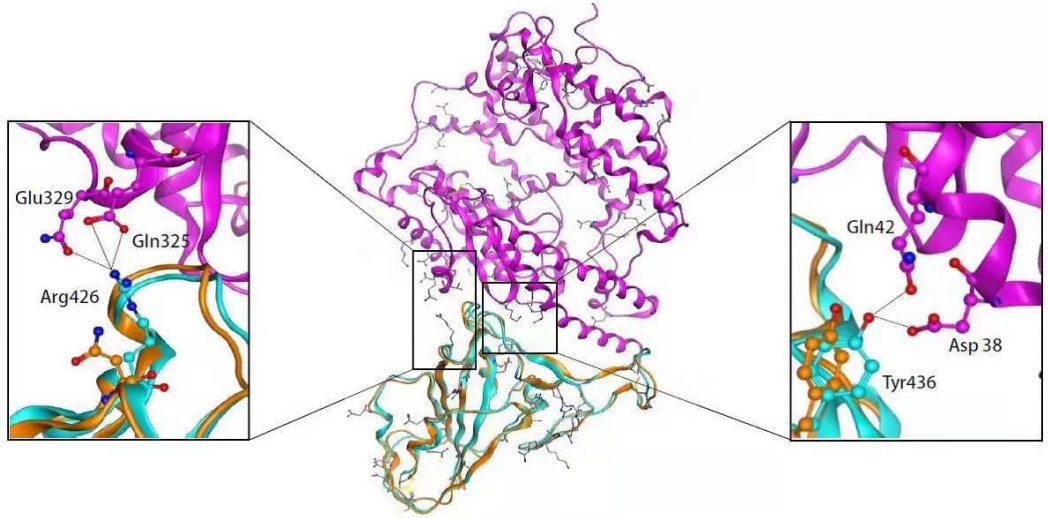
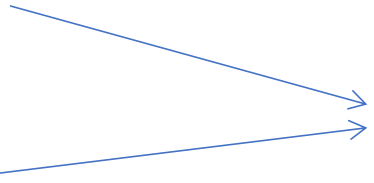


三、流行病学特点

- 前期收治病例多数有武汉市华南市场暴露史
- 家庭聚集性发病
- 医务人员感染



较强的人传人特性

- 非武汉市外传染均为输入性病例
- 目前的病死率近2%

四、临床与实验室检查

- 潜伏期1-14天
- 发病年龄集中在40-60岁，男性、有基础疾病者居多，尚未见儿童发病
- 主要症状：发热，多为高烧（＞38℃），少数为低烧（＞37.5℃），个别病例无发热
- 其他症状：乏力，干咳为主，并逐渐出现气短、呼吸困难
- 严重者急速进展为急性呼吸窘迫综合征（ARDS）、脓毒症、肾功能衰竭、难以纠正的代谢性酸中毒和出血凝血障碍

四、临床与实验室检查

- 实验室检查

✓ 白细胞总数正常或减低，淋巴细胞计数减低

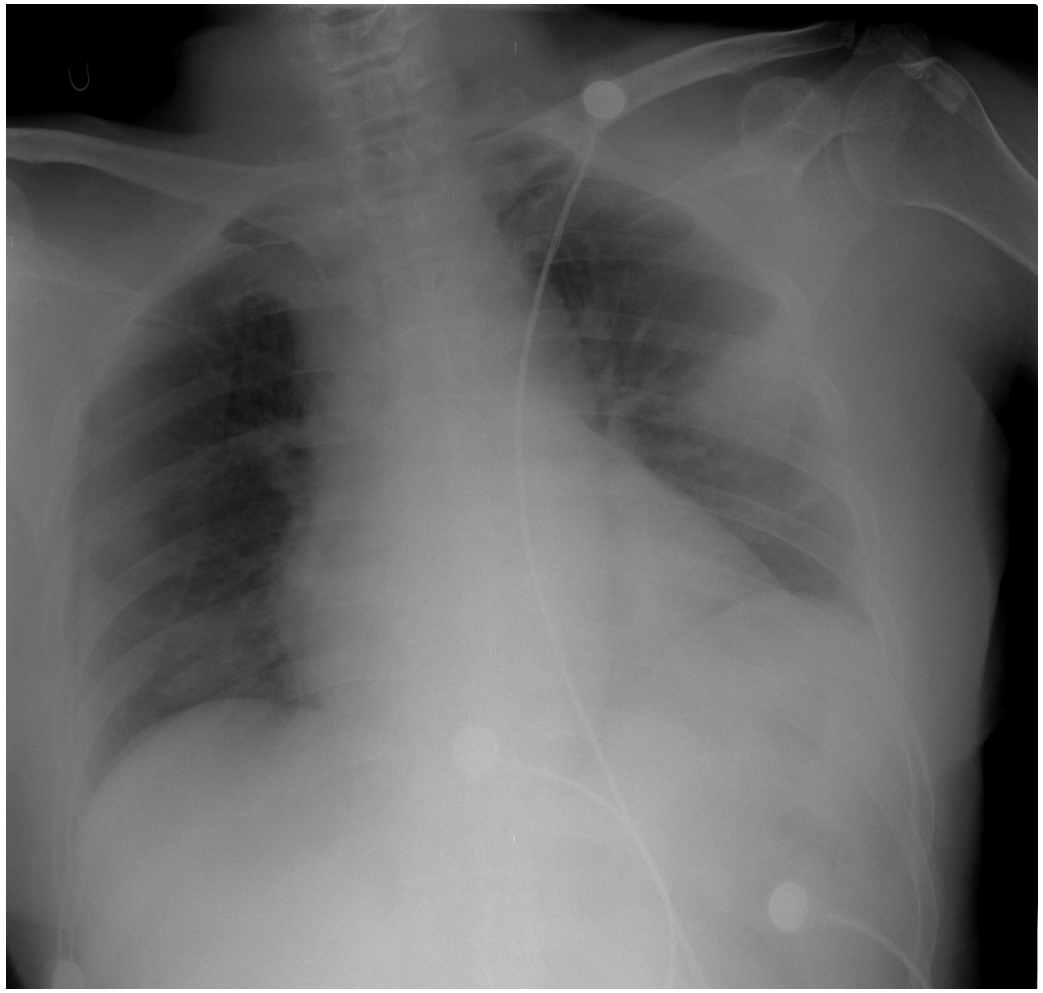
✓ 血清C反应蛋白增高，部分患者肝酶和肌酶升高

✓ 甲乙型流感病毒、腺病毒、呼吸道合胞病毒、副流感病毒和柯萨奇病毒核酸检测阴性

✓ 新型冠状病毒核酸检测阳性

五、影像学表现

- 平片漏诊率高，病变初期多无异常发现
- 支气管炎或细支气管炎
- 肺野局限性斑片状或团块状影
- 病变严重时表现为双肺弥漫性多发实变影



女，56岁，2019.12.25发病，2020.1.5 X线检查

五、影像学表现

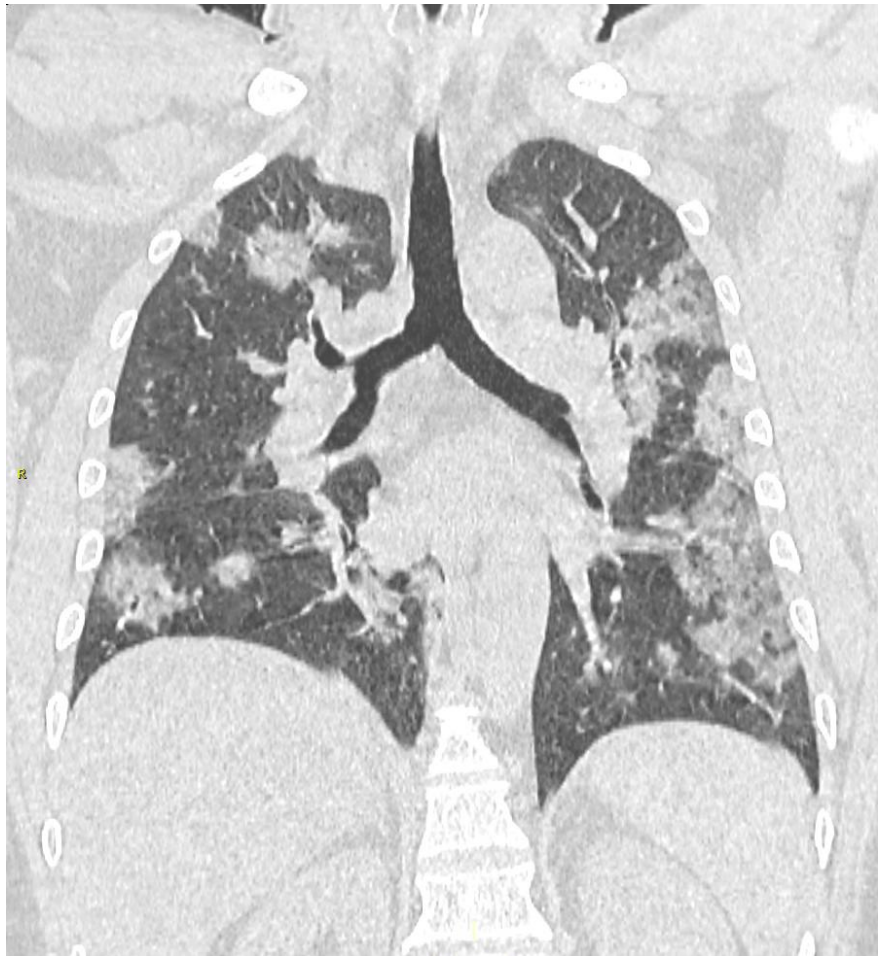
- HRCT为当前筛查与诊断的主要手段，根据病变范围与类型将CT表现分为早期、进展期与重症期
- 常见CT表现

✓ 单发或双肺多发，斑片状或节段性磨玻璃密度影（GGO）为主，其内纹理可呈网格状（铺路石征）

✓ 沿支气管束或背侧、肺底胸膜下分布为主，空气支气管征

✓ 合并或不合并小叶间隔增厚，少数叶间胸膜增厚

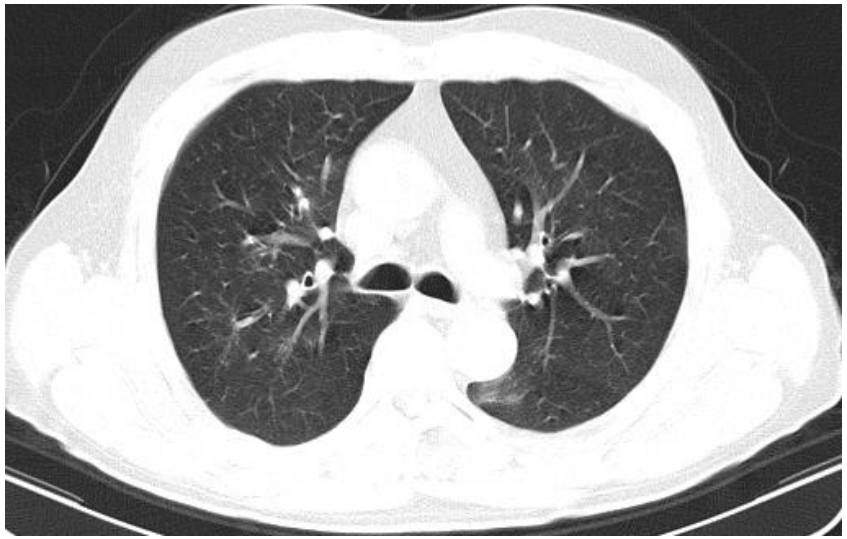
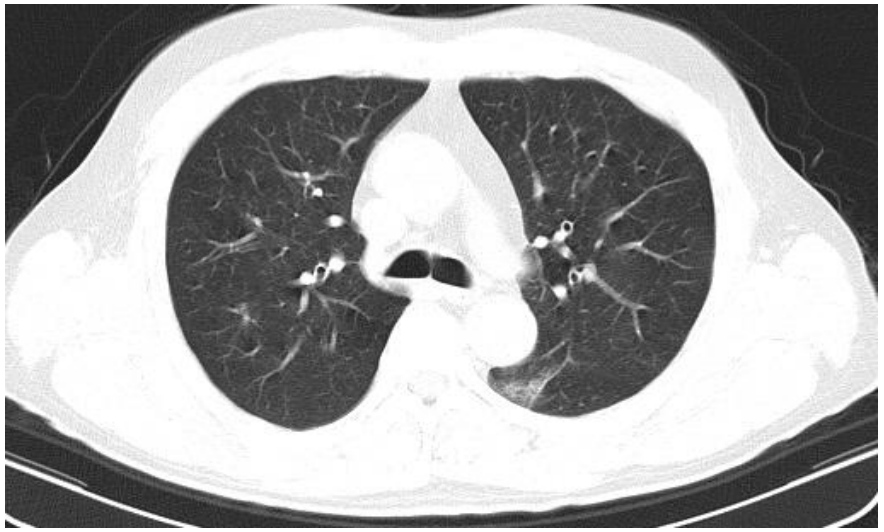
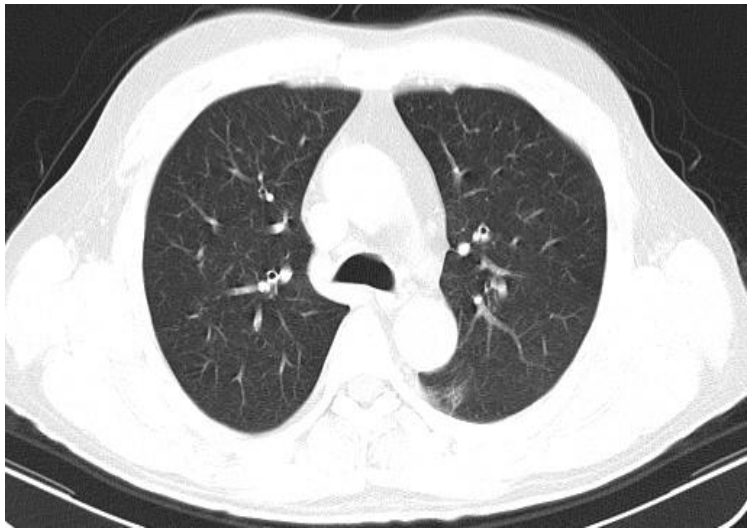
✓ 极少数少数伴胸腔积液或淋巴结肿大


男，44岁，华南海鲜市场密切接触史，无明显诱因发热、乏力，外院抗菌抗病毒治疗无效

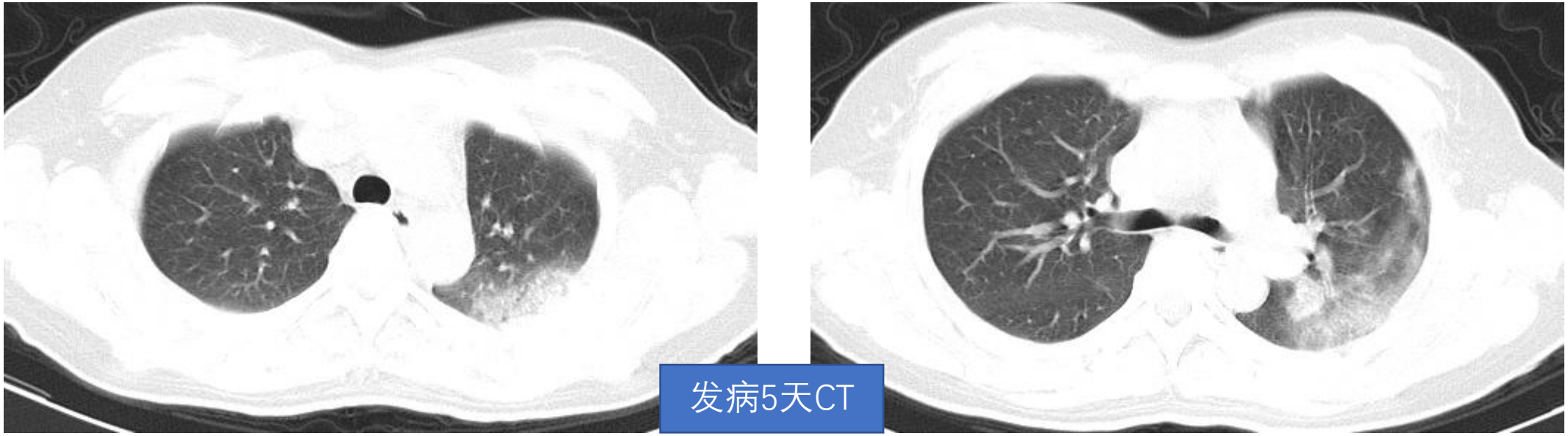
早期CT表现

- 病变局限，斑片状、亚段或节段性分布为主
- 胸膜下分布
- GGO 伴或不伴小叶间隔增厚

男性，55岁，华南海鲜市场商户，发热、咳嗽10天

早期CT表现

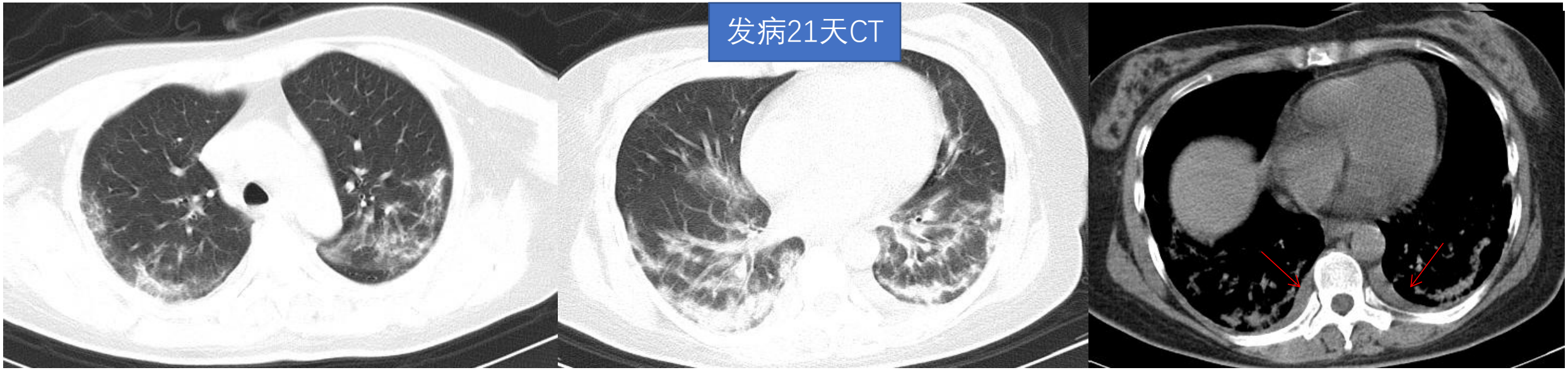


发病5天CT

女性，54岁，华南海鲜市场商户，发热、气短干咳

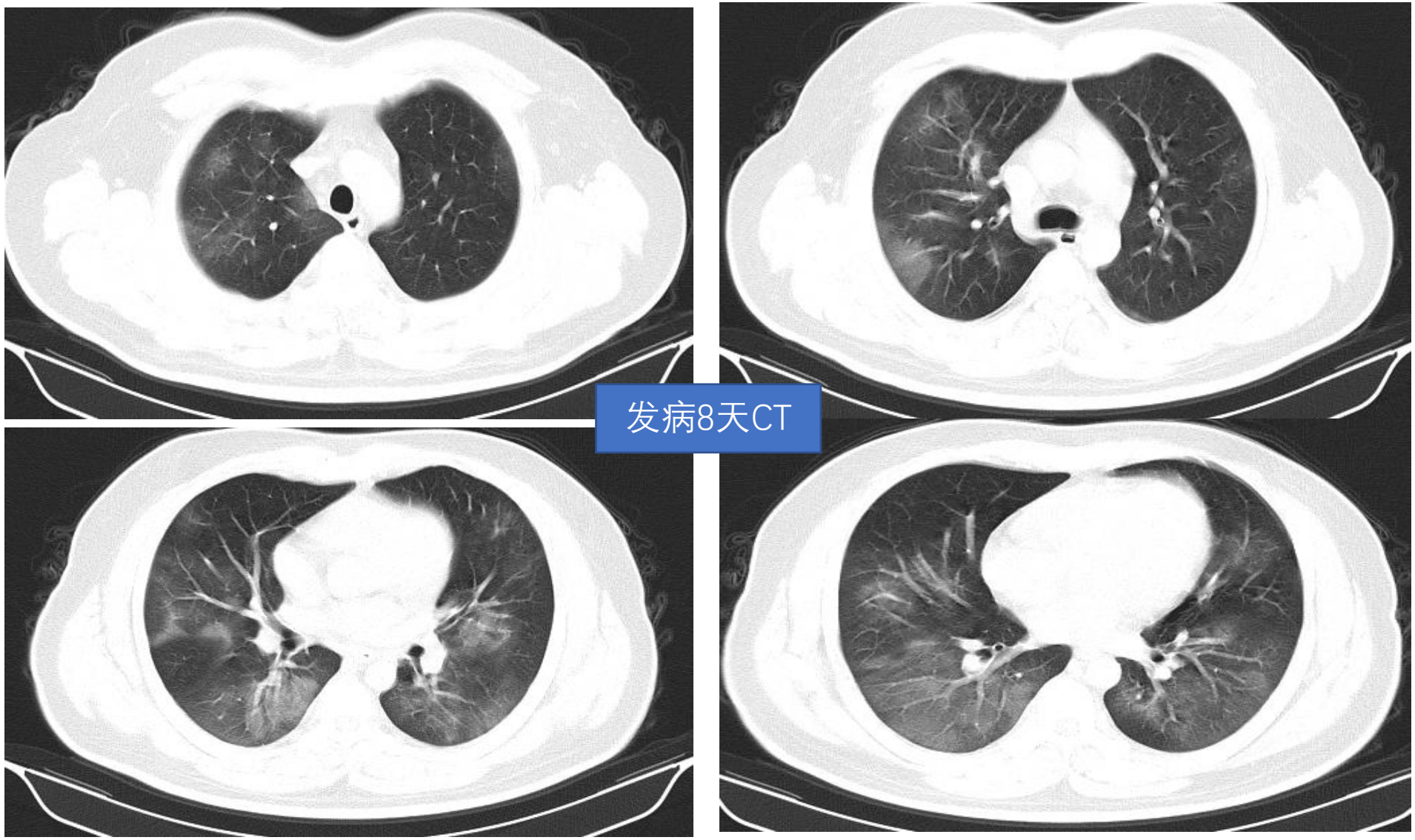
进展期CT表现

- 病变进展，病灶增多、范围扩大，累及多个肺叶
- 部分病灶变密实，GGO与实变影或条索影共存
- 少数出现少量胸腔积液



女性，57岁，否认华南海鲜市场接触史，间断咳嗽11天，发热、气急

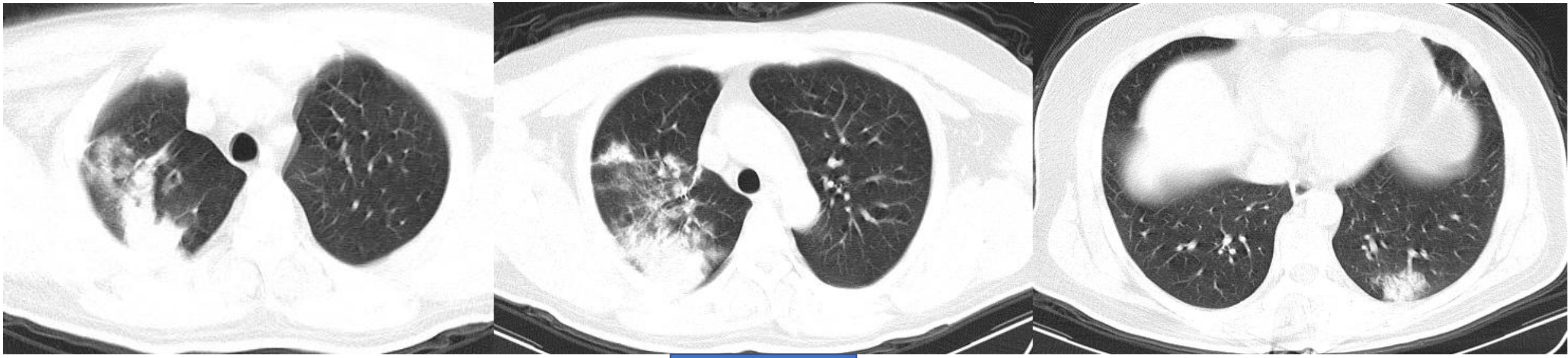
进展期CT表现



发病8天CT

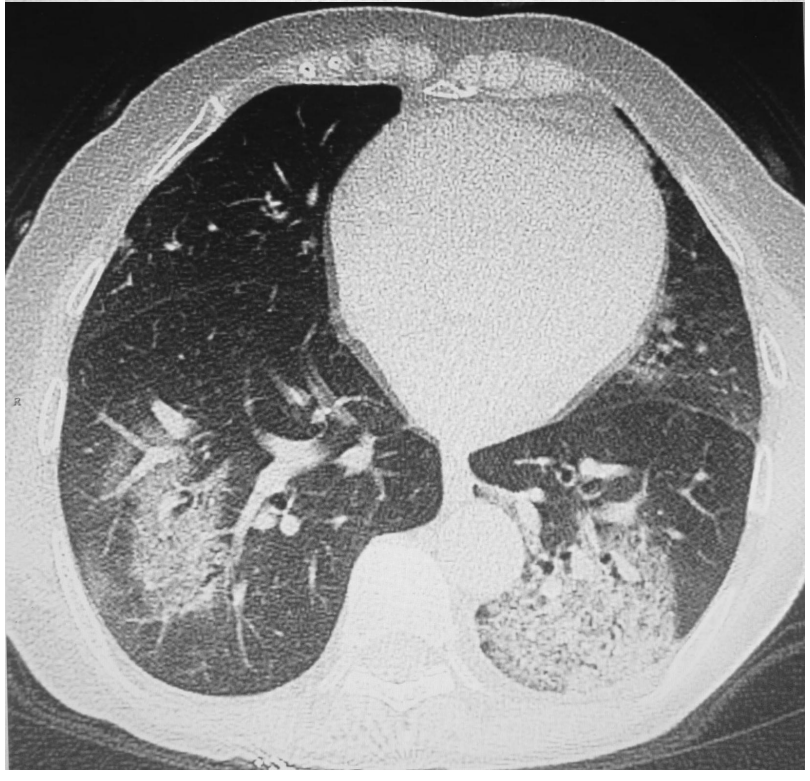
男性，32岁，否认华南海鲜市场接触史，间断发热、咳嗽8天

进展期CT表现



发病16天CT

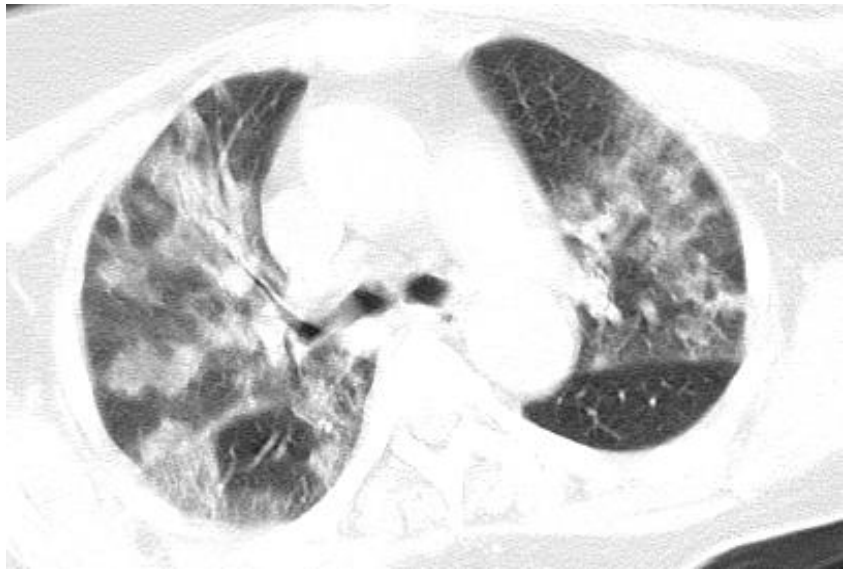
男性，46岁，华南海鲜市场商户，发热



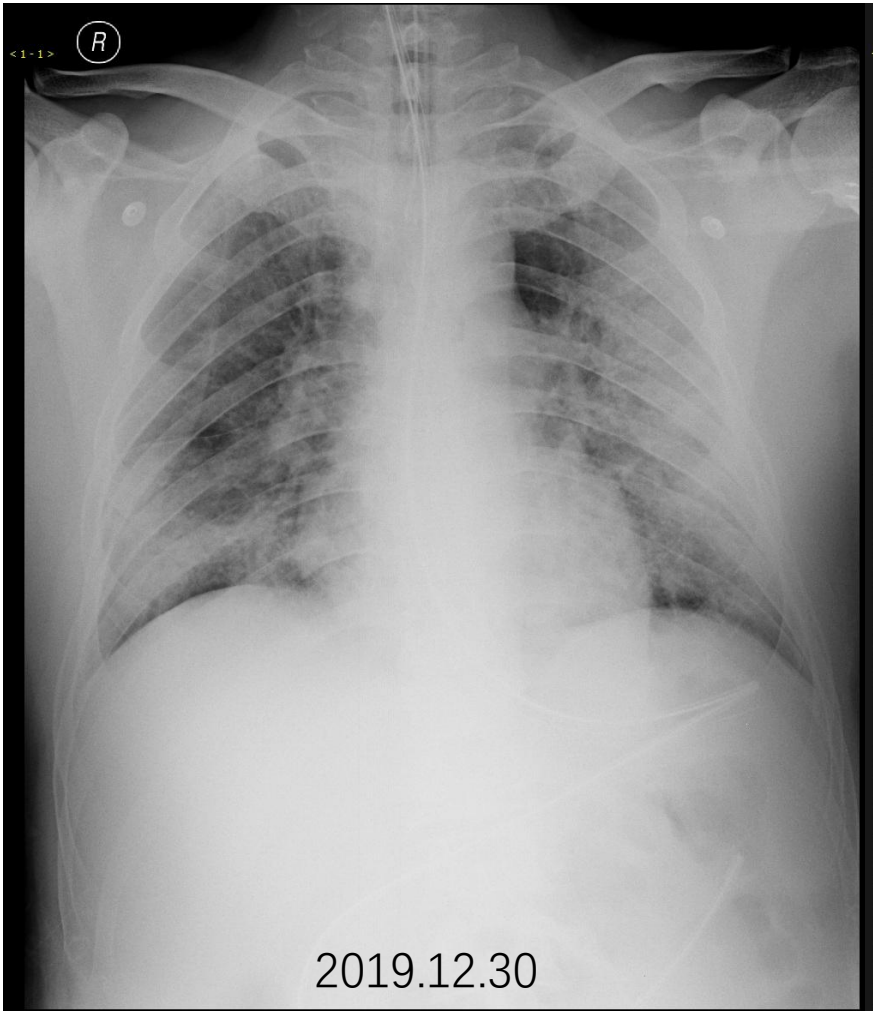
女，63岁，发热、乏力。否认华南海鲜市场接触史。左右CT肺窗图像分别为1周前后，病变进展

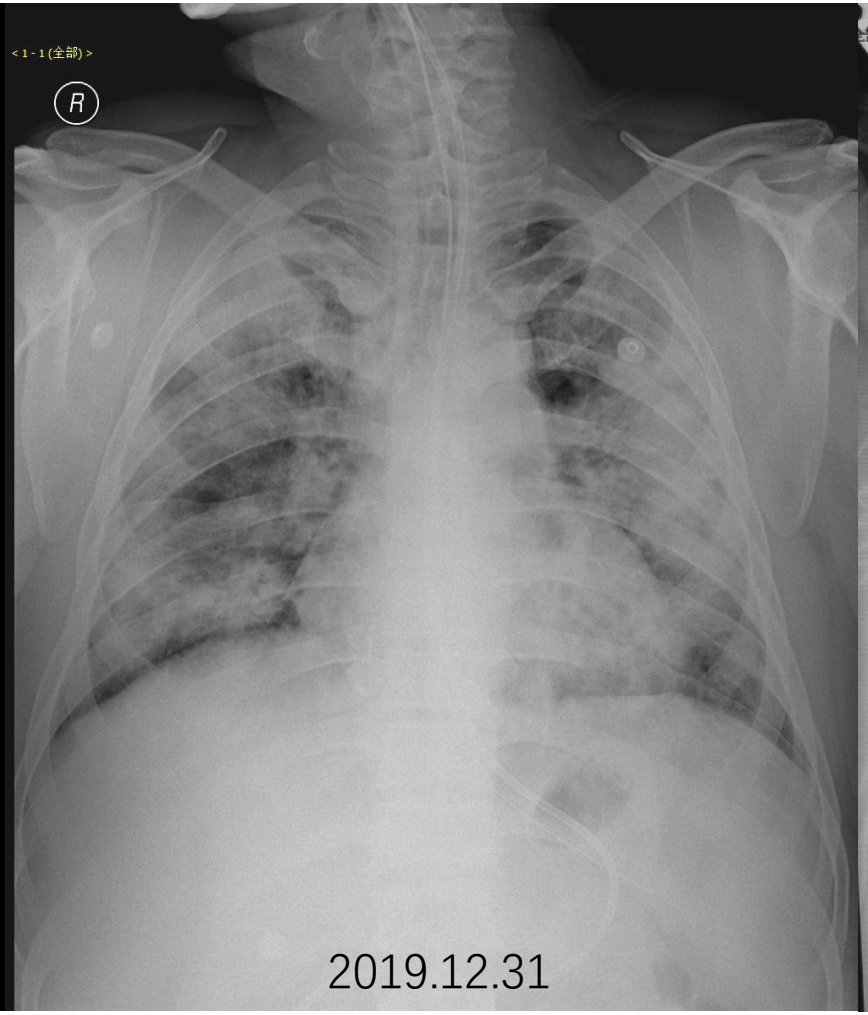
重症期CT表现

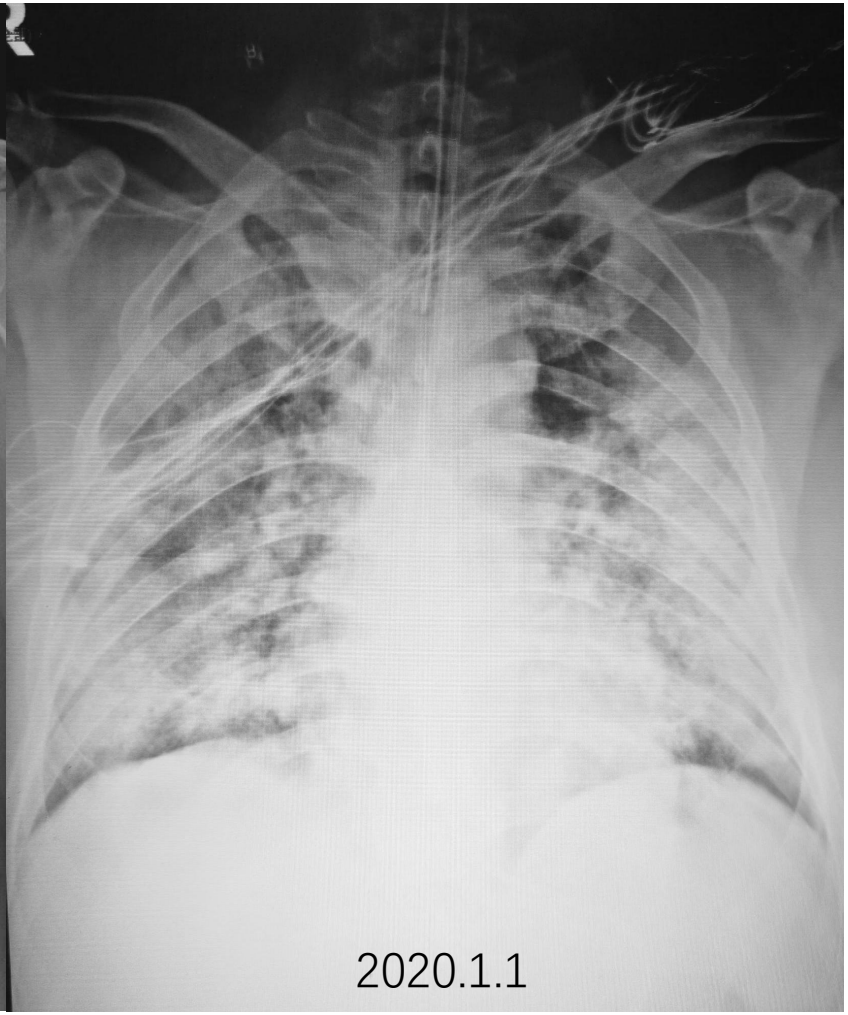
- 双肺弥漫性病变，少数呈“白肺”表现
- 实变影为主，合并GGO，多伴条索影
- 空气支气管征



男性，39岁，华南海鲜市场商户，发热、咳嗽10天

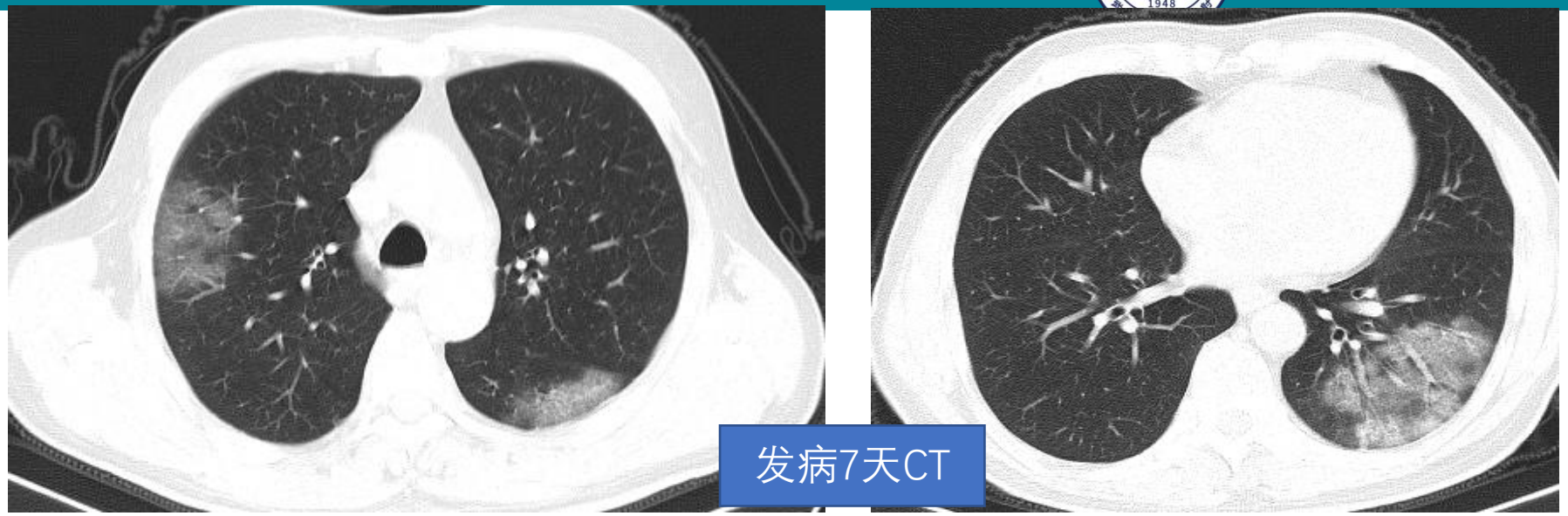




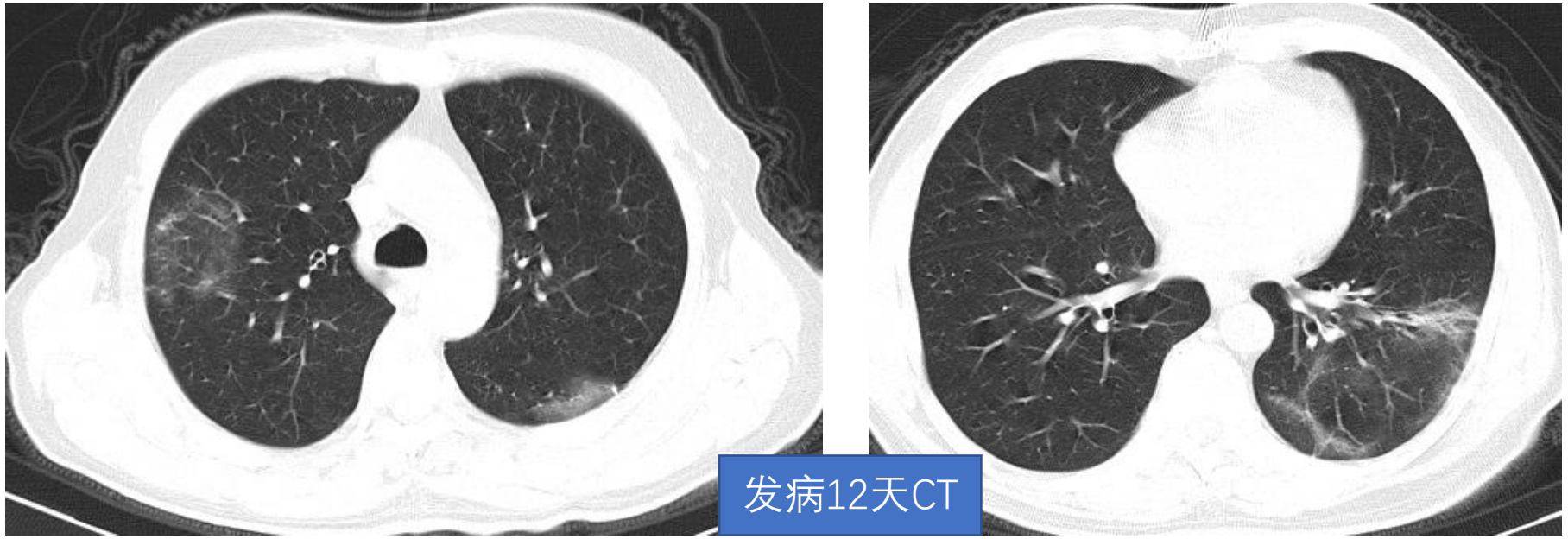


男，44岁，华南海鲜市场密切接触史，无明显诱因发热、乏力，治疗中病情进展

六、治疗后好转



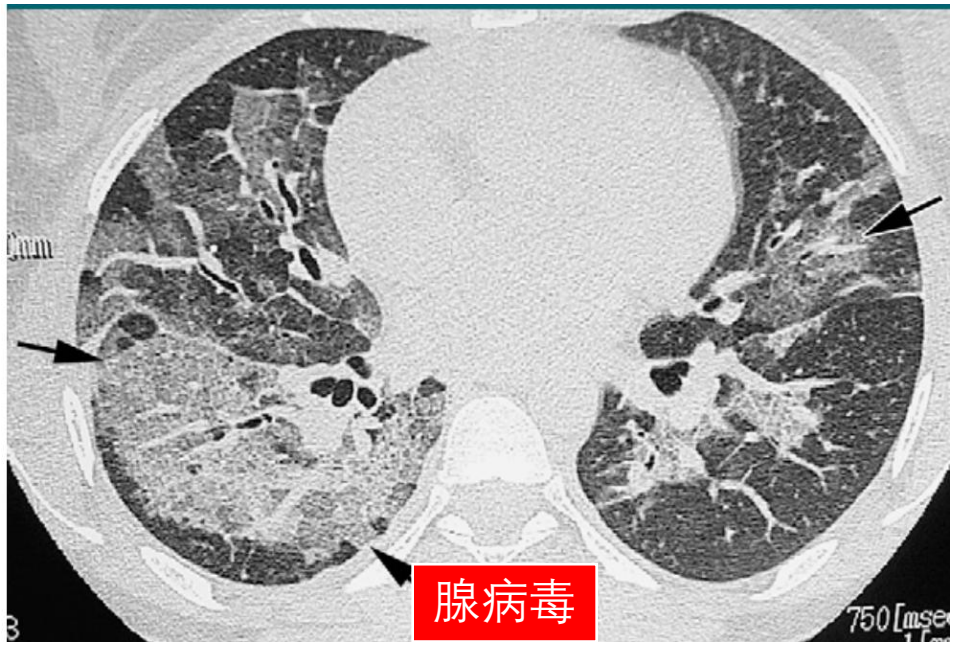
发病7天CT

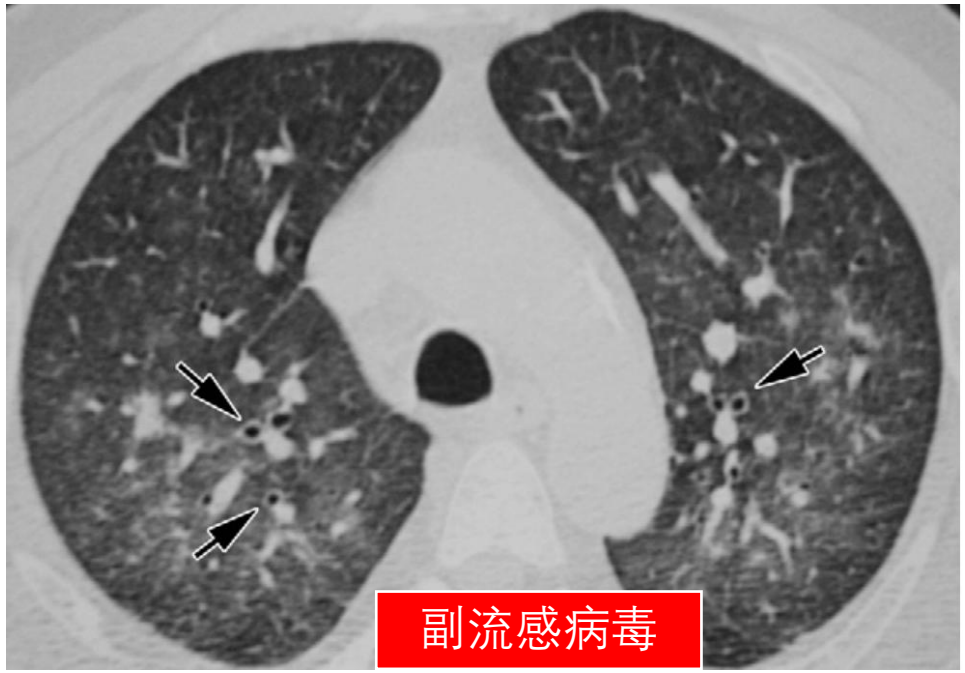


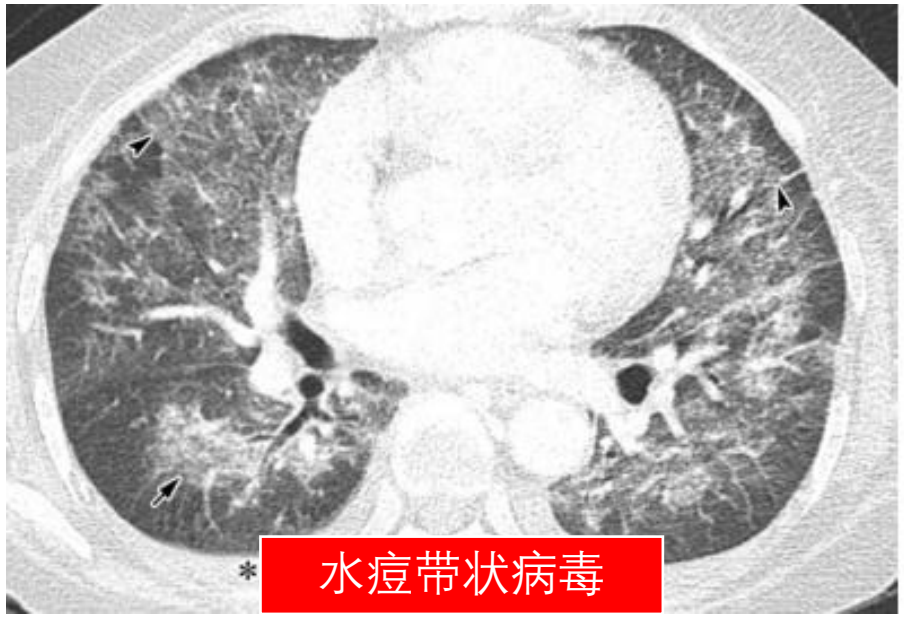
发病12天CT

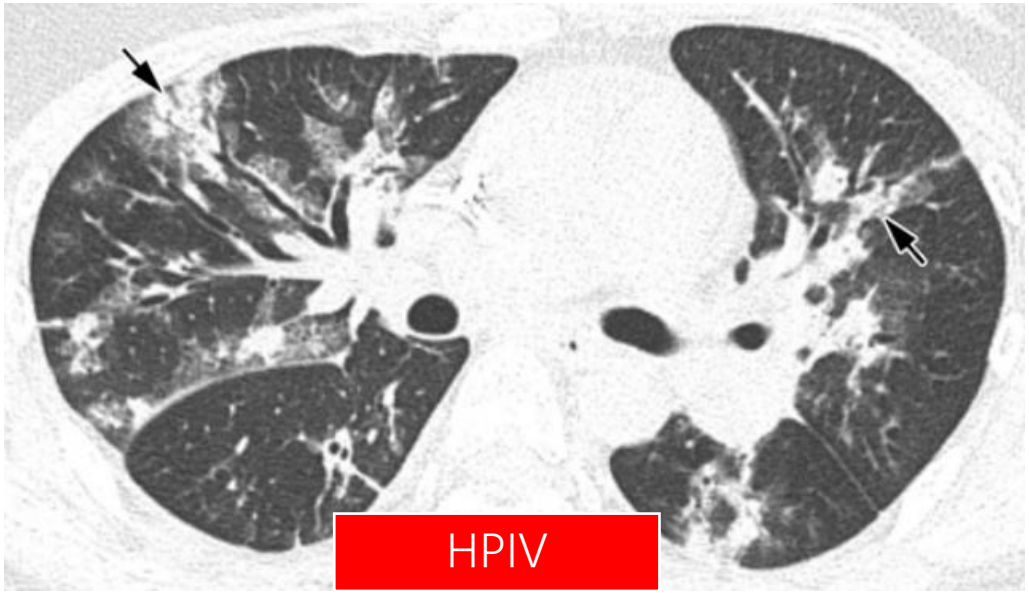
七、鉴别诊断

- 与其他病毒性感染（甲乙型流感病毒、副流感病毒、腺病毒、呼吸道合胞病毒、巨细胞病毒、SARS或MERS等）鉴别
- 与非感染性病变：机化性肺炎、嗜酸性肺炎鉴别

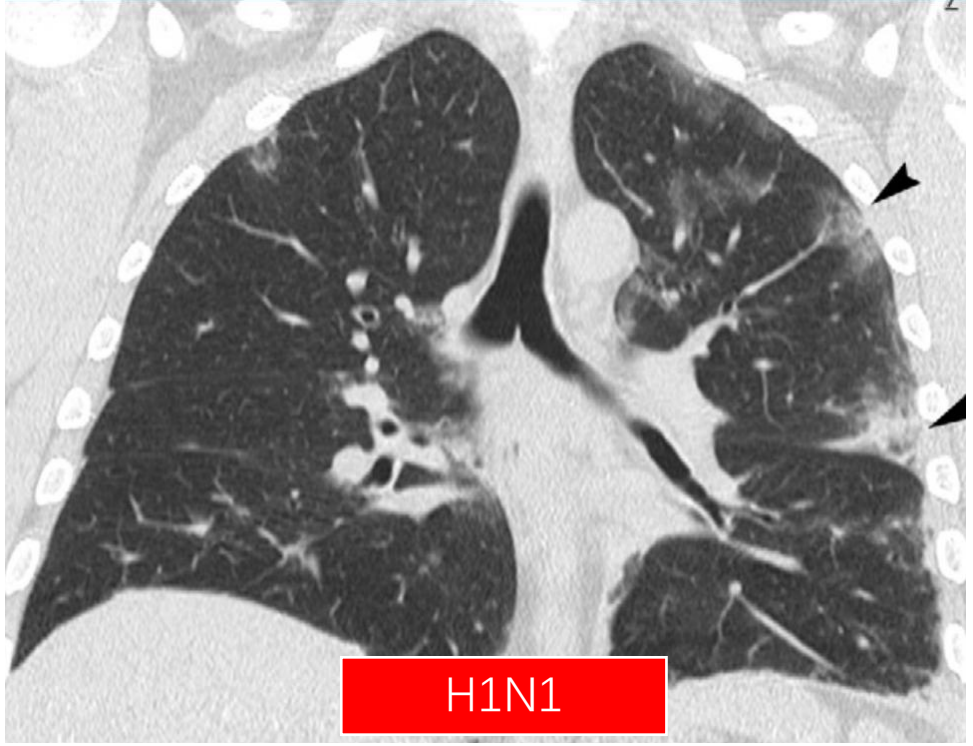

腺病毒

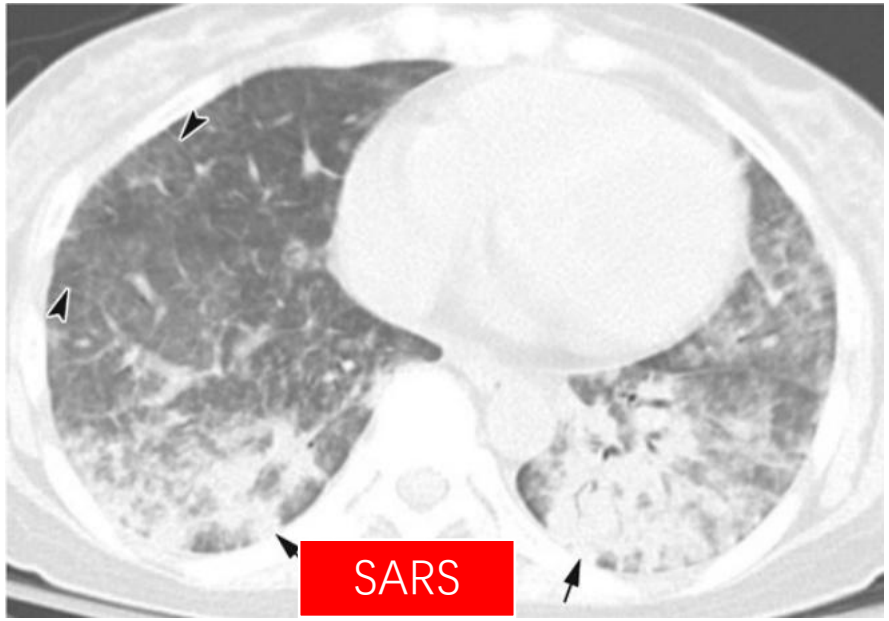

副流感病毒

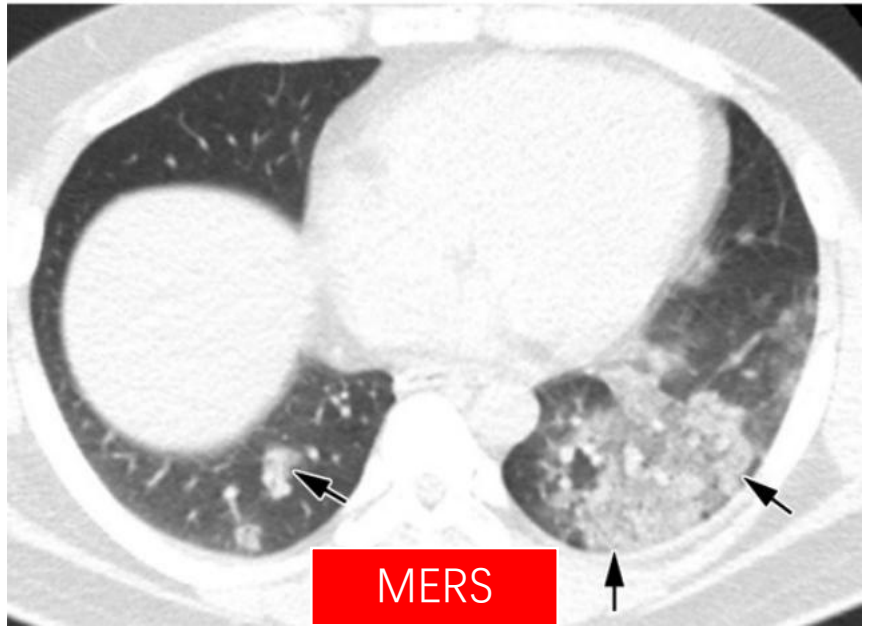

水痘带状病毒

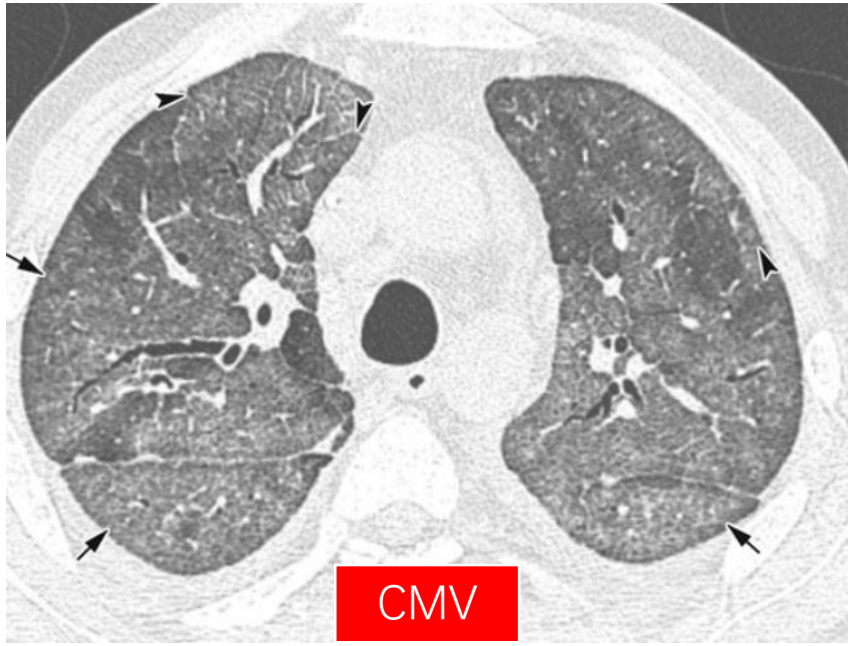

HPIV

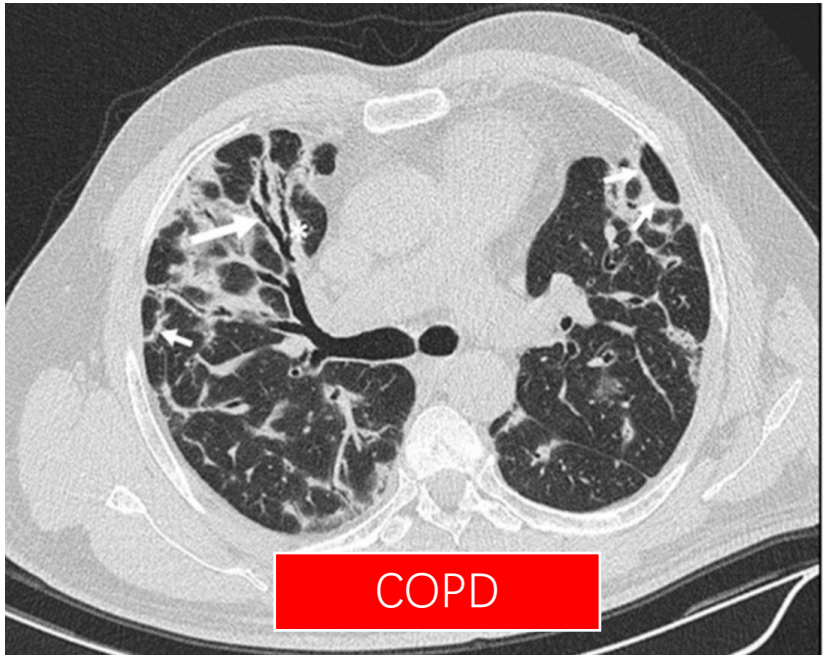

H1N5

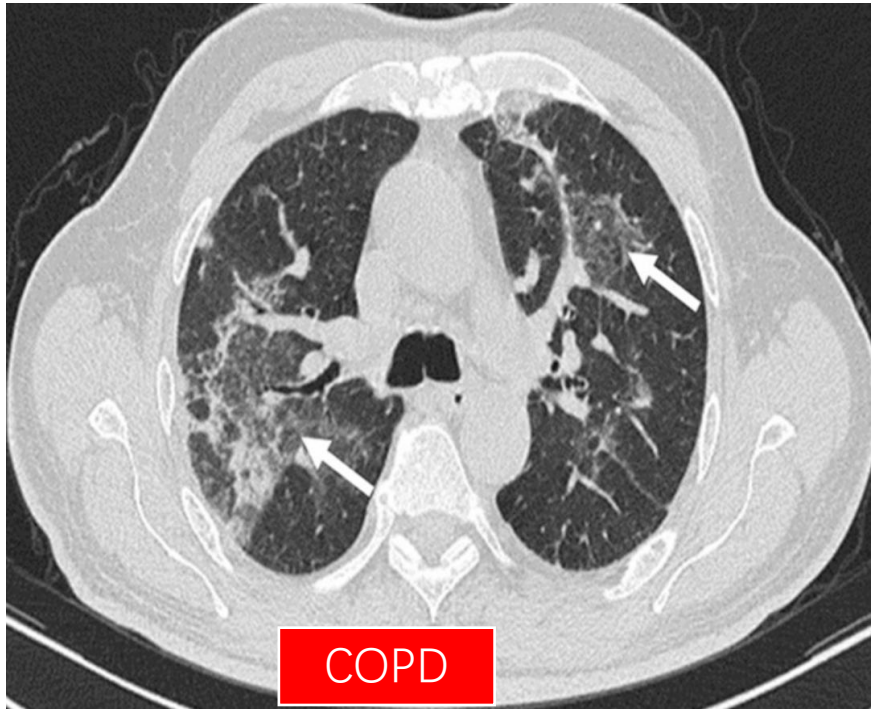

H1N1


SARS


MERS


CMV


COPD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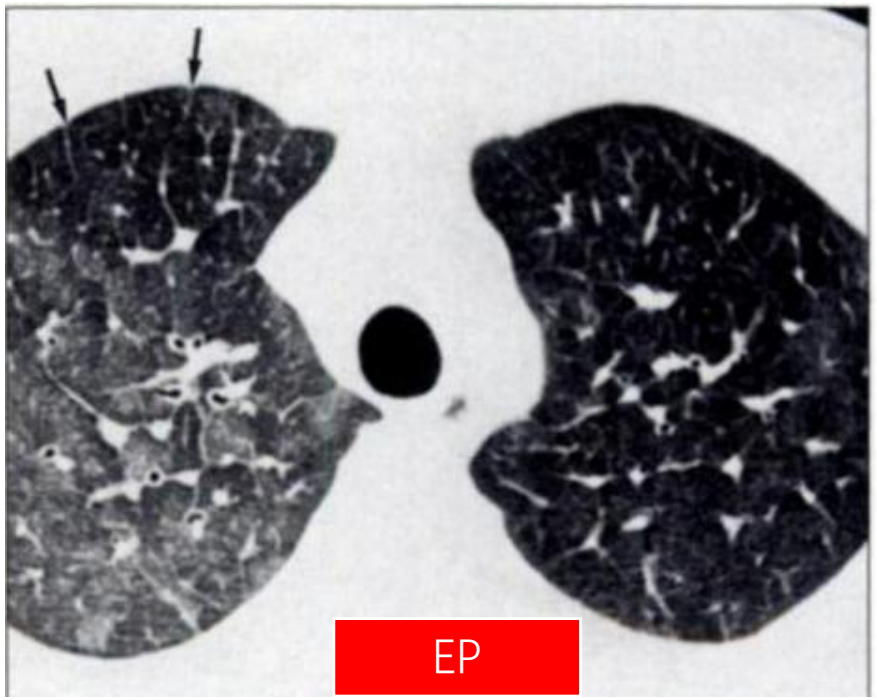
EP

小结

- 2019-nCoV肺炎影像学表现多样，CT易于发现早期呈磨玻璃表现病变，胸片可以发现肺实变为主病变、进行床旁检查、疗效评价，等
- 2019-nCoV肺炎与其他病毒性肺炎及机化性肺炎、嗜酸性肺炎在影像学表现上存在重叠，鉴别有一定困难，结合患者接触史、旅游史、首发症状及实验室检查，有助于鉴别
- 与SARS、禽流感相比，2019-nCoV肺炎患者如无明显其他合并感染与并发症，进展相对缓慢

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Thank you for your Attention

武 汉 协 和 医 院 放 射 科