

Brain and Lung Imaging Correlation in COVID-19 Patients: Could the Severity of Lung Disease Reflect the Prevalence of Acute Neuroimaging Abnormalities? A Global Multicenter Observational Study

Online supplemental data: **Table 1** and **Figure 8**

Table 1. Patients and CT chest characteristics of hospitalized patients with new onset of neurological symptoms following COVID-19

	COVID-19 patients with acute neurological symptoms			<i>P value</i>
	Total (N = 135)	Acute CT/MR* neuroimaging 49 (36%)	Non-acute CT/MR* neuroimaging 86 (64%)	
Gender				
Men	86 (64)	32 (65)	54 (63)	0.77
Women	49 (36)	17 (35)	32 (37)	
Age (y), mean ± SD	68.2 ± 15.1	65.4 ± 15.9	69.8 ± 14.5	0.10
<50	15 (11)	6 (12)	9 (10)	0.75
>50	120 (89)	43 (88)	77 (90)	
Past medical history				
None	11 (8)	5 (10)	6 (7)	0.69
Hypertension	73 (54)	28 (57)	45 (52)	0.59
Diabetes	39 (29)	11 (22)	28 (33)	0.21
Coronary artery disease	31 (23)	7 (14)	24 (28)	0.07
Cerebrovascular disease	19 (14)	8 (16)	11 (13)	0.57
Malignancy	17 (12)	5 (10)	12 (14)	0.53
Neurologic signs				
Altered mental status	79 (58)	26 (53)	53 (62)	0.33
Ischemic stroke	51 (38)	40 (82)	11 (13)	<0.001
Headache	16 (12)	6 (12)	10 (12)	0.91
Myalgias	17 (12)	6 (12)	11 (13)	0.93
Epilepsy	13 (10)	5 (10)	8 (9)	0.86
Dizziness	7 (5)	4 (8)	3 (4)	0.26
Neuralgia	6 (4)	2 (4)	4 (5)	0.87
Ataxia	4 (3)	1 (2)	3 (4)	0.55
Hyposmia	1 (0.7)	1 (2)	0	0.36
CT chest characteristics				
GGOs and consolidation				
Presence of either GGOs or consolidation	119 (88)66	46 (94)	73 (84)	0.01
Presence of GGOs with consolidation	(49)	25 (51)	31 (36)	0.66
Presence of GGOs without consolidation	46 (34)	3 (6)	21 (24)	0.97
Absence of both GGOs and consolidation	16 (12)	4 (8)	13 (15)	0.19
Presence of consolidation without GGOs	7 (5)		3 (3)	0.27
Crazy-paving pattern	12 (9)	4 (8)	8 (9)	0.12
Other				
Cavitation	0	0	0	NA
Pleural effusions	11 (8)	5 (10)	6 (12)	0.13
Lymphadenopathy	9 (7)	4 (8)	5 (6)	0.49
CT lung severity score				
Mean	7.3	9.9 ± 4.2	5.8 ± 4.3	<0.001
Range	0-19	1-17	0-19	
Predominant Distribution				
Peripheral	110 (81)	41 (84)	69 (80)	0.11
Perihilar	9 (7)	4 (8)	5 (6)	0.89
Upper zone	26 (19)	12 (24)	14 (16)	0.51
Lower zone	61 (45)	28 (57)	33 (38)	0.12
Lobar Involvement				
RUL	69 (51)	19 (38)	50 (58)	0.19
RML	52 (38)	20 (41)	32 (37)	0.39
RLL	97 (72)	37 (76)	60 (70)	0.22
LUL	60 (44)	18 (37)	42 (49)	0.44
LLL	102 (75)	40 (82)	62 (72)	0.17

Numbers in Parentheses are Percentages. * 20 patients with MR scans were reviewed in the group of “Acute neuroimaging”

and 16 in the group of “Non-acute neuroimaging”.

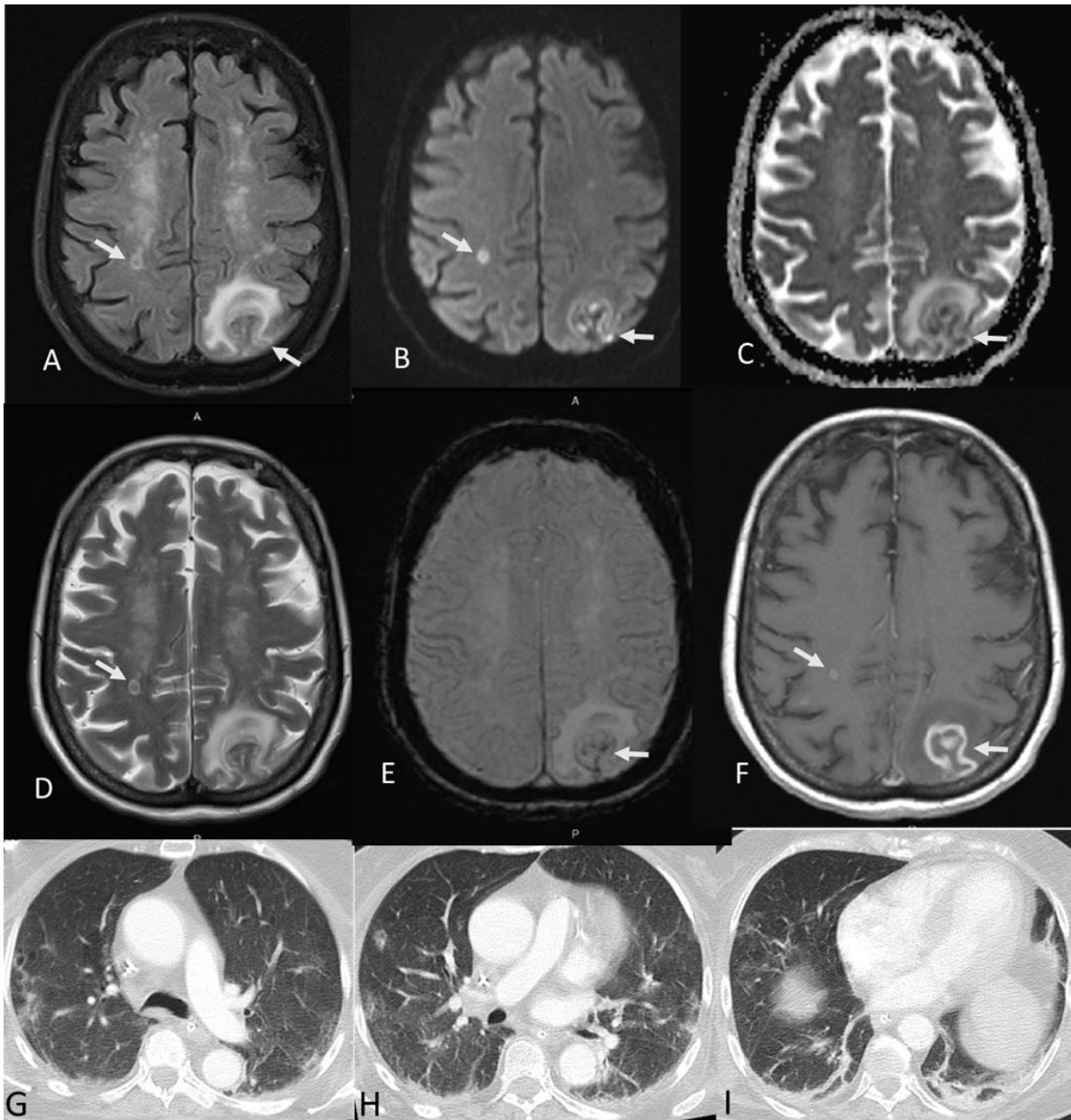


Figure 8: Septic-embolic encephalitis. A 70 year-old-woman with pathological wakefulness after sedation. Long admission in the ICU with intubation for COVID 19. Initially presented with altered mental state with PMH of high blood pressure, chronic kidney disease and type 2 diabetes mellitus. No history of malignancy. (A,B,C, D) Axial Flair, DWI/ADC and T2W images demonstrate multiple nodular lesions with diffusion restriction, largest in left parietal lobe with hemosiderin deposits (E). (F)

Axial T1W gadolinium enhanced image demonstrates multiple enhancing nodular lesions, largest in the left parietal lobe with ring enhancement. CT images in lung windows show bilateral peripheral ground-glass opacities and linear consolidations predominantly in lower lobes (G-I). CT lung severity score was 9. Chest CT scan was obtained 9 days after initial onset of respiratory symptoms.