



COVID-19 ASSOCIATED PULMONARY ASPERGILLOSIS IN INTENSIVE CARE UNIT: A SINGLE CENTRE PRELIMINARY EXPERIENCE

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BACKGROUND

About 5-10% of COVID-19 patients require treatments predisposing to bacterial and fungal superinfections^{1,2}. COVID-19 Associated Pulmonary Aspergillosis (CAPA) is increasingly reported³, but different criteria have been proposed given the absence of suggestive histological and radiological findings.

METHODS

Between March 2020 and October 2021, we retrospectively analysed a subgroup of severe COVID-19 patients admitted to the Intensive Care Units (ICU) of the 'Città della Salute e della Scienza' university hospital of Turin (Italy) with possible/probable CAPA (CAPA pr/pb), defined according to criteria proposed by Koheler⁴ and presenting with a galactomannan positivity on serum or broncho-alveolar lavage (BAL) or with positive culture for *Aspergillus* species on BAL or broncho-aspirate

Table 1. Population characteristics

	Overall (n=224)	CAPA pr/pb (n=22)	no CAPA (n=202)	p-value
Age (years), mean±SD	63,5±11,3	63,1±7,7	63,5±11,6	943
Sex (Male), n (%)	171 (76,3%)	17 (77,3%)	154 (76,2%)	0,914
BMI (kg/m ²), mean±SD	29,1±6,1	26,5±5,5	29,2±6,3	0,893
Comorbidities				
Cardiovascular disease, n (%)	44 (19,6%)	5 (22,7%)	39 (19,3%)	0,701
Hypertension, n (%)	140 (62,5%)	13 (59,1%)	127 (62,9%)	728
Chronic lung disease, n (%)	30 (13,4%)	3 (13,6%)	27 (13,4%)	0,972
Chronic kidney disease, n (%)	18 (8,0%)	4 (18,2%)	14 (6,9%)	0,065
Solid tumor, n (%)	5 (2,2%)	2 (9,1%)	3 (1,5%)	<0,05
Diabetes mellitus, n (%)	51 (22,8%)	9 (40,9%)	42 (20,8%)	<0,05
Obesity, n (%)	115 (51,3%)	10 (45,5%)	105 (52,5%)	0,530
SOFA score, median (IQR)	7,0 [4,0-9,0]	9,0 [6,3-12,0]	7,0 [4,0-9,0]	<0,001
Days of hospitalization (days), median (IQR)	13,0 [8,0-22,0]	16,0 [8,0-23,5]	13,0 [8,0-22,0]	0,366
Superinfections, n (%)	145 (69,7%)	21 (95,5%)	78 (61,4%)	<0,001
Previous antibiotics, n (%)	110 (49,1%)	18 (81,8%)	92 (45,5%)	<0,01
MV, n (%)	198 (89,6%)	22 (100,0%)	176 (88,4%)	0,092
Vasopressors, n (%)	155 (72,8%)	21 (95,5%)	134 (70,2%)	<0,01
Dialysis, n (%)	27 (12,1%)	7 (31,8%)	20 (9,9%)	<0,01
ECMO, n (%)	48 (21,4%)	5 (22,7%)	43 (21,3%)	0,791
COVID-19 therapies				
Antivirals, n (%)	71 (31,7%)	2 (9,1%)	69 (34,2%)	<0,05
Tocilizumab, n (%)	44 (19,6%)	3 (13,6%)	41 (20,6%)	0,580
Steroids, n (%)	160 (72,3%)	6 (27,7%)	144 (72,0%)	0,943
ECMO, n (%)	48 (21,4%)	5 (22,7%)	43 (21,3%)	0,791
Mortality, n (%)	123 (54,9%)	17 (77,3%)	106 (52,7%)	<0,05

RESULTS

224 patients were enrolled, with an overall ICU mortality of 55% (Table 1). In the CAPA pr/pb group (10%), we found a higher prevalence of ongoing solid tumour and diabetes mellitus, a higher SOFA score, and more bacterial superinfections. A significant difference was also observed regarding dialysis treatment, vasopressor therapy and mortality. In Kaplan-Meier survival curve, however, the difference was no longer statistically significant (OR 1.47, 95% CI [0.88-2, 47], p-value 0.143), but significantly associated with presence of solid tumour (OR 3,55, IC 95% [1,19-10,60], p <0.05) and the administration of steroids (OR 2,14, IC 95% [1,34-3,43], p <0.01). A high SOFA score (HR 1,24, IC 95% [1,07-1,45], p <0.01), the presence of diabetes mellitus (HR 2,87, IC 95% [1,01-8,11], p <0.05) and previous antibiotic therapy (HR 5,20, IC 95% [1,72-19,90], p <0.01) were significantly associated with CAPA development.

CONCLUSION

Our preliminary data seem to confirm a relatively high number of CAPA cases and the need for a high index of suspicion. Future prospective, multicentre studies are needed to estimate the impact of COVID-related therapy on the likelihood of developing aspergillosis and to better evaluate the efficacy of an early diagnosis and therapy.

- References
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