ACINETOBACTER BAUMANNII IN COVID-19: A DOUBLE CHALLENGE
A single centre preliminary experience

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BACKGROUND

Since the beginning of the COVID-19 pandemic, the impact of superinfections in Intensive Care Unit (ICU) patients progressively increased. Many studies have shown that the rate of bloodstream infections (BSI)[1] and ventilator-associated pneumonia (VAP)[2] raised compared to the one observed in non-COVID-19 patients[3]. It has also been reported that the prevalence of Gram negative multi-drug resistant organisms (MDRO)[2], especially *Acinetobacter baumannii* (Ab)[1], known to increase mortality[4-5], seems to escalate.

METHODS

We prospectively evaluated the clinical impact of Ab infection, carbapenem resistance and the MDRO coinfection in all SARS-CoV-2 pneumonia patients admitted in our ICU from September to December 2020. In this cohort, we preliminarily analysed data from patients with Ab colonization or infection. Surveillance cultures (tracheal aspirate, rectal swab, urinary culture) were done weekly; blood cultures or bronco-alveolar lavage cultures were done on clinical decision.

RESULTS

Out of a total of 70 patients admitted in ICU with SARS-CoV-2 infection, 26 patients (37%) developed Ab infection (20) or colonization (6) (Table 1).

Ab infection/colonization was discovered after a mean of 16 days of hospitalization and 11 days of ICU recovery.

All Ab strains observed were carbapenem-resistant, but colistin-sensitive.

Regarding Ab and other bacterial coinfection, 17 patients (65%) developed an additional infection, caused by a MDRO in 10 patients (38% of the total). Specifically, Carbapenem-resistant *Klebsiella pneumoniae* subtype KPC was found in 6 patients (23%), Meticillin-resistant *Staphylococci* in 3 (12%) and Extended Spectrum Beta Lactamases organisms in 3 (12%) (Table 2).

Overall mortality in Ab-patients was 65%. In patients with Ab-invasive infection, mortality was 88% in Ab VAP and 17% Ab BSI, respectively; mortality related to septic shock was 100%. When Ab infection was subsequent or contemporary to a different MDRO colonization/infection, the mortality was 87%.

CONCLUSION

Our preliminary results seem to confirm a very high mortality in Ab-coinfected COVID-19 ICU patients. A frequent association with other MDRO infection and colonization deserve further analysis. Causes of MDRO combined superinfection may be found in immunological dis-regulation due to SARS-CoV-2 infection, immune-suppressive therapies, but also in frequent patient referrals and sub-optimal adherence to infection control measures and microbiological surveillance.

	Overall	Survived	Dead	P-value
Patients (%)	26	8 (31)	18 (69)	
AGE (mean ± SD)	59.7 ± 10.5	63 ± 7	58 ± 12	0.248
BMI (mean + SD)	30.4 ± 6.9	31.7 ± 7.2	29.9 ± 7.0	0.545
Sex M (%)	20 (77)	7 (88)	13 (72)	0.628
Colonization (%)	6 (23)	5 (63)	1 (7)	**0.004**
Infection (%)	20 (77)	3 (38)	17 (94)	**0.004**
BSI (%)	3 (11)	1 (13)	2 (12)	1
VAP (%)	13 (50)	0	13 (72)	**0.002**
VAP + BSI (%)	4 (15)	2 (25)	2 (11)	0.563
SOFA at Ab infection/colonization (mean ± SD)	9.4 ± 3.0	6.0 ± 1.0	11.0 ± 3.0	**>0.001**
V-V ECMO (%)	12 (46)	1 (13)	11 (61)	**0.036**
Septic Shock (%)	13 (50)	0	13 (72)	**0.002**
Length of stay in Hospital (mean ± SD)	39 ± 25	69 ± 32	29 ± 9	**0.018**
Other invasive infection (%)	17 (65)	5 (63)	12 (67)	1
Days in ICU until Ab infection/colonization (mean + SD)	11.8 ± 7.8	8.9 ± 3.4	13.2 ± 8.6	0.082
Days in hospital until Ab infection/colonization (mean + SD)	16.1 ± 8.5	11.4 ± 4.3	18.2 ± 8.9	**0.014**

Table 2	Total	Infection	Colonization
All pathogens (%)	24 (92)	17 (65)	7 (27)
MDROs (%)	18 (69)	10 (38)	8 (31)
Cp-KPC (%)	17 (65)	6 (23)	11 (42)
ESBL (%)	3 (12)	3 (12)	0 (0)
MRSA-MRSE (%)	4 (16)	3 (12)	1 (4)

Table1 (on top):Demographic and general characteristics of *A. baumannii* coinfected COVID-19 ICU patients.

Table 2 (on the left): Bacterial co-infection in *A. baumannii* COVID-19 patients.

REFERENCES

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