Procalcitonin in COVID-19: a new biomarker for antimicrobial stewardship

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BACKGROUND

- Bacterial co-infection at diagnosis of COVID-19 is uncommon[1].
- C-reactive protein and white cell count are unreliable biomarkers of bacterial infection in COVID-19.
- Few studies have investigated the use of procalcitonin (PCT) as a biomarker to guide antimicrobial stewardship in patients with COVID-19[2,3].

AIM

To evaluate the usefulness of PCT for antimicrobial stewardship (AMS) in patients with COVID-19.

METHODS

A pre-post study was performed. All patients had SARS-CoV-2 detected by PCR on a respiratory specimen. Patients were excluded if they had a concurrent acute non-respiratory infection or ITU admission.

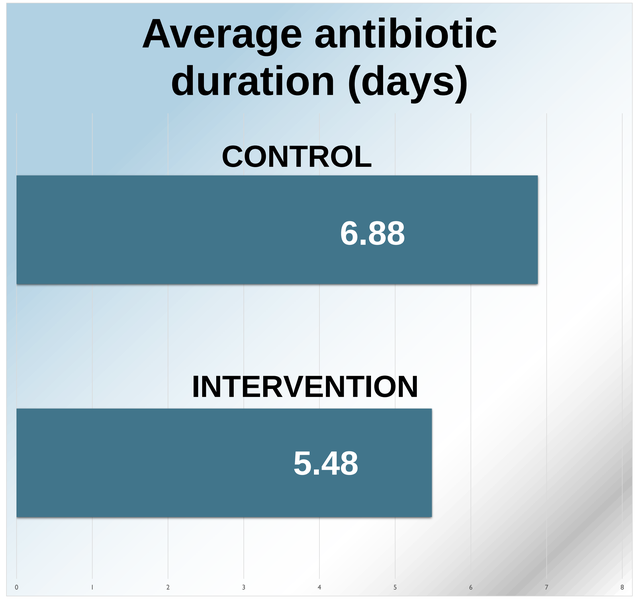
The control group did not receive any intervention from Clinical Microbiology. The intervention group had PCT measured twice - on diagnosis/hospital admission and 2 days later. We documented advice on antimicrobial duration based on clinical status, chest imaging and serial PCTs. PCT, chest imaging and antibiotic duration were collected in both groups. Death or discharge within 30-days was recorded.

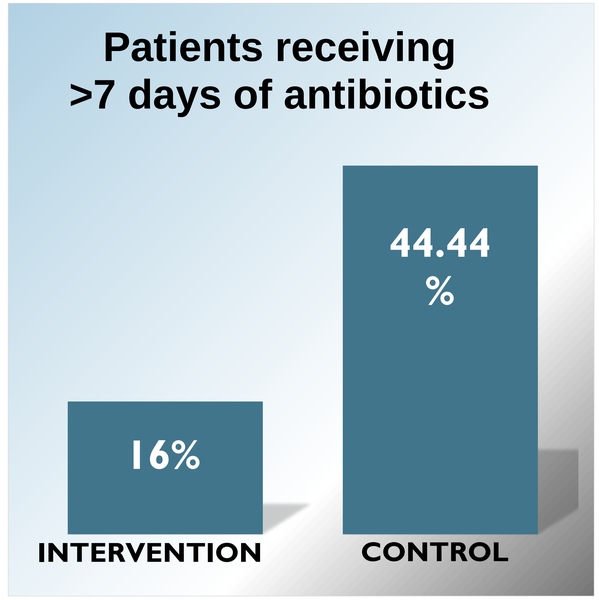
RESULTS

	INTERVENTION	CONTROL
No. of patients	25	18
CA-COVID	22 (88%)	10 (55.6%)
HA-COVID	3 (12%)	8 (44.4)
CXR Infiltrate	17 (68%)	10 (55.5%)

PCT	INTERVENTION
<0.5 d0 and d2	88%
Decreased	12%
Increased	8%

PCT	CONTROL	
Measured	66%	
Serial measurements	44.4%	
<0.5	Initial	Repeat
	91.6%	100%





Advice given to discontinue antibiotics after 48h in 12 of 25 patients. Teams acted on advice immediately in only 2 patients.

OUTCOMES

- Intervention group: no antibiotics re-started within 5 days after discontinuation.
- 30-day mortality:
  - 2 patients in the control group
  - 1 patient in the intervention group (antibiotics were not stopped)
  - Cause of death in all patients was COVID pneumonitis

CONCLUSION

- Serial PCTs can be used in conjunction with clinical assessment to exclude respiratory bacterial co-infection and thus safely stop antibiotics.
- Incorporation of PCT into a clinical algorithm would provide prescribers with the confidence to stop antibiotics.

REFERENCES

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3. Williams et al (2021) Evaluation of procalcitonin as contribution to antimicrobial stewardship in SARS-CoV-2 infection: a retrospective cohort study. *J Hosp Infect.* 2021 April;110;p103-107.