Treatment of *Legionella pneumophila* using omadacycline versus moxifloxacin: Subanalysis results from a phase 3 randomized, double-blind, multicenter study (OPTIC)

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Background

Community-acquired bacterial pneumonia (CABP), most frequently associated with *Streptococcus pneumoniae*, is increasingly caused by atypical pathogens such as *Legionella pneumophila*.[1–4]

Data on antibiotic susceptibility of *L. pneumophila* are limited, with selection of suitable treatment (frequently macrolides or fluoroquinolones) usually based on empirical decisions rather than treatment guidelines.[5,6]

Omadacycline (OMC), an aminomethylcycline antibiotic, has shown intracellular penetrance and potent in vitro activity against *L. pneumophila*, and is approved in the US for intravenous (IV) and oral treatment of CABP, including *L. pneumophila*.[7,8]

In the OPTIC phase 3 randomized, double-blind study, OMC showed non-inferiority to moxifloxacin (MOX) for adults with CABP, across a range of causative pathogens.[9]

Methods

In the OPTIC study, patients with suspected CABP were randomized 1:1 to receive 100 mg IV OMC every 12 h for two doses then every 24 h (q24h), or 400 mg IV MOX q24h, with optional transition to oral after 3 days (OMC: 300 mg q24h; MOX: 400 mg q24h). Total treatment duration was 7–14 days.

Presence of *L. pneumophila* was detected via positive urinary antigen test or serology at baseline.

Efficacy was assessed as early clinical response (ECR; 72–120 h after receipt of the first dose) and clinical success at post-treatment evaluation (PTE; 5–10 days after last dose).

- **ECR:** improvement in at least two CABP symptoms with no worsening of other CABP symptoms or use of rescue antibacterial treatment.
- **Clinical success at PTE:** resolution of signs and symptoms to the extent that further antibacterial therapy was not necessary.

Safety was assessed by treatment-emergent adverse events (TEAEs) and laboratory measures.

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Omadacycline is effective for patients with community-acquired bacterial pneumonia caused by *Legionella pneumophila*

Objective

To assess the safety and efficacy of omadacycline (OMC) versus moxifloxacin (MOX) for treatment of adult patients with community-acquired bacterial pneumonia (CABP) with *Legionella pneumophila* as a causative pathogen

Conclusions

Baseline disease severity was similar across treatment groups.

Rates of clinical success were high for OMC and MOX at both early clinical response and post-treatment evaluation.

Similar rates of TEAEs were reported across the two treatments, but more patients reported drug-related TEAEs with MOX than with OMC.

Overall, OMC showed comparable safety and efficacy profiles to MOX for treatment of CABP patients with *L. pneumophila*.

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Results

L. pneumophila was detected at baseline in 37 patients in both treatment groups.

Baseline demographics and disease severity were similar across treatment groups (**Table**).

Normal renal function was reported in 54.1% and 56.8% of patients in the OMC and MOX groups, respectively.

Higher rates of symptomatic asthma with wheezing, and chronic cough, in the MOX group; mild-to-moderate COPD and prior lung infection in the OMC group. In the OMC and MOX groups 0% vs 2.7%, respectively, had history of liver disease, although 35.1% of patients in each group had elevated liver enzymes at baseline.

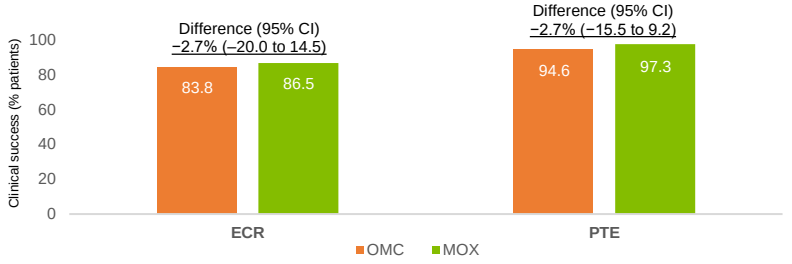
Table 1: Baseline disease characteristics.

	OMC (n=37)	MOX (n=37)
PORT Score		
Mean (SD)	79.6 (13.1)	82.5 (14.7)
II (≥51, ≤70), n (%)	5 (13.5)	11 (14.9)
III (≥71, ≤ 90), n (%)	23 (62.2)	47 (63.5)
IV (≥91, ≤ 130), n (%)	9 (24.3)	16 (21.6)
Prior antibiotic use, n (%)	11 (29.7)	9 (24.3)
Modified ATS criteria, n (%)	29 (80.6)	32 (88.9)
SIRS criteria met, n (%)	33 (89.2)	34 (91.9)
CURB-65 class, n (%)		
0	10 (27.0)	6. (16.2)
1	19 (51.4)	20 (54.1)
2	8 (21.6)	11 (29.7)

ATS, American thoracic society; PORT, pneumonia outcomes research team; SIRS, systemic inflammatory response syndrome

Rates of clinical success at ECR and PTE were high and similar across the two treatment groups (**Figure**).

Figure 1: Clinical success rates at ECR and PTE; ITT population



The number of patients reporting at least one TEAE was similar across the two treatment groups, although higher rates of drug-related TEAEs were seen in the MOX group (18.9% vs 8.1% for OMC). No drug-related serious TEAEs or deaths were reported.

References

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