

# IN VITRO ASSESSMENT OF GENTAMICIN AND AZITHROMYCIN BASED COMBINATION THERAPY AGAINST NEISSERIA GONORRHOEAE ISOLATES IN INDIA

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## Background:

The public health burden of infections caused by *Neisseria gonorrhoeae* (NG) is magnified due to high rates of resistance to traditional antimicrobials. The use of combination therapy for gonococcal infections improves treatment effectiveness and retards the emergence of resistance. The aim of this study was to evaluate the *in vitro* efficacy of alternative dual therapy comprising of gentamicin and azithromycin for NG.

## Methods:

E test method was used to determine MICs of gentamicin and azithromycin individually prior to testing in combination by cross or 90° angle formation method. A total of 70 clinical isolates of NG displaying varying ceftriaxone MICs along with 2 reference strains (WHO K and P) & one ceftriaxone-resistant QA isolate were examined. Fractional inhibitory concentration index (FICI) was calculated and the results were interpreted using the following criteria: synergy, FICI ≤ 0.5; indifference or additive, FICI >0.5 to ≤ 4.0; and antagonism, FICI > 4.0.

## Results:

A total of 53 (75.7%) isolates displayed indifference effects while 17 (24.2%) demonstrated synergy. The FICI values ranged from 0.127 to 3.317 with the mean of 0.94, depicting additive or indifference effects. Most importantly, the FICI value of ceftriaxone-resistant QA strain was 1.0. The geometric mean MICs of azithromycin and gentamicin decreased significantly from 0.275 µg/ml to 0.108 µg/ml ( $p = 0.0001$ ) & from 4.34 µg/ml to 2.023 µg/ml ( $p = 0.0001$ ) respectively, in combination. Further, no significant difference in mean FICI values was observed in ceftriaxone susceptible and decreased susceptibility (DS) isolates of NG and both exhibited indifference.

## Conclusion:

No antagonism was observed in this combination thereby suggesting that it could be a future treatment option as we prepare for a post-cephalosporin era. However, comprehensive *in vivo* evaluations are warranted and recommendations to be made based on clinical trials.

## Disclosure of Interest Statement:

None