ABSTRACT

*Pseudomonas aeruginosa* is the most common pathogen which is associated with nosocomial and community acquired infections. A total of 141 isolates recovered from pus of patients having burns and wound infections, urine and blood samples of patients at Indira Gandhi Medical College, Shimla, Himachal Pradesh were confirmed as *P. aeruginosa*. The isolates were tested for their susceptibility to 26 different antibiotics belonging to nine different antibiotic classes by antibiotic cultural sensitivity assay. High rate (69.50%) of multidrug resistant strains was recorded and 59.18% of the Multidrug Resistance isolates were resistant to carbapenems. Carbapenem resistant isolates were tested for Metallo-BL production by two phenotypic tests: Combined Disc Test (CDT) and Ezy MIC Test. All the isolates positive for MBL production by phenotypic tests was further characterized genotypically. Segments of MBL genes *bla*<sub>IMP-1</sub> and *bla*<sub>VIM-2</sub>, genes of three integron classes *int1*, *int2* and *int3* and sulphonamide resistance gene *sul1* were amplified by PCR. *bla*<sub>VIM-2</sub> gene was amplified in six out of 27 MBL positive isolates. *bla*<sub>IMP-1</sub> gene was however, not amplified from any of the isolates tested. *int1* gene was amplified in eleven and *sul1* gene was amplified in fourteen MBL positive isolates. Only one isolate Pa138 carried both *bla*<sub>VIM-2</sub> and *int1* genes. The specificity of the amplicons was established by nucleotide sequencing of the amplicons of six isolates for *bla*<sub>VIM-2</sub> gene, and three isolates each for *int1* and *sul1* gene amplicons. The present study highlights higher prevalence of multidrug resistant strains of *P. aeruginosa* in Shimla region of Himachal Pradesh and the occurrence of genotypes of *bla*<sub>VIM-2</sub>, *int1* and *sul1*.

The present study, thus involves the phenotypic and genotypic characterization of the strains prevalent in Shimla region of Himachal Pradesh. The study would be useful for understanding molecular epidemiology of *P. aeruginosa* strains prevalent in the hospital settings and in the community of this geographic region. The studies on MDR and MBL positive isolates might be useful to the clinicians with a view to opt for appropriate antibiotic for treating *P. aeruginosa* infections and consequently to prevent further spread of the resistant strains.