Summary

Infection of the eye leads to conjunctivitis, keratitis, and endophthalmitis which are commonly associated with microbial contamination. Different types of bacteria invade the ocular tissues and causing infection, *Pseudomonas aeruginosa* is one of pathogenic agents that invade eye tissues and cause infections.

The present study was designed to isolation *P.aeruginosa* from eye infection and investigate the Toxin A and Phospholipase C genes which are responsible for virulence factor of *P. aeruginosa*, through samples that were collected from one hundred patients (64 males and 36 females) with age ranged from less than 10 to 70 years, suffering from eye infections, during the period from 18 January 2014 to15 May 2014.

The *P. aeruginosa* isolates were diagnosed phenotypically for identification of isolated bacteria by morphological, cultural, biochemical tests, mini API 20NE system and confirm identification by using VITEK 2 system. The sensitivity of *P. aeruginosa* isolates against antibiotics was tested by Kirby-Bauer disc diffusion method and also confirmed by VITEK-2 system for antimicrobials susceptibility testing.

Polymerase Chain Reaction was used to detect Toxin A and Phospholipase C genes for detection virulence factor of *P. aeruginosa* isolates.

The results revealed that the most frequent Gram negative isolated bacterium was *P. aeruginosa* which forms 20(20%) as mean 21.45 SD±22.50 from total cases, while no *Pseudomonas aeruginosa* growth was seen 80(80%) as mean 25.11 SD±21.59 swabs with highly significant differences ($P<0.01$).

Results showed that the distribution of age groups/year according to culture result, showed percent 11(55.0%) of *P. aeruginosa* isolation was observed in children patient during age below 10 years. Incidence of eye infections in relation to gender revealed that the total male cases 14(70%), which were higher than those of female 6(30%). Type of eye infection compared with culture results explain that conjunctivitis 12(60%) most common causes infection among children below 10 years was 11(55%), while 4(20%) isolates caused bacterial keratitis and 4(20%) of *P. aeruginosa* isolates causing endophthalmitis. The present study discussed some epidemiological features of eye infection in relation to residence , which showed that the percentage of urban positive cases were 11(55%) which slightly higher than rural cases 9(45%).

The antibiotics susceptibility test for *P. aeruginosa* isolates showed that 19(95%) isolates were sensitive to Meropenem, Gentamicin, and Ciprofloxacin**,** 17(85%) isolates sensitive to Amikacin, while 16 (80%) sensitive to Tobramycin**,** so that 14(70%) sensitive to Ceftazidime, while 19(95%) of isolates resist to Ampicillin, Piperacillin, Chloramphenicol and 18(90%) *P. aeruginosa* isolates were resistance to Tetracycline. The results of VITEK-2 system for antimicrobial susceptibility showed that same as results obtained by Kirby-Bauer disc diffusion method.

A molecular method by PCR technique were also used for detection of *P. aeruginosa* virulence genes using primers specific to Exotoxin A gene (*toxA*) and phospholipase C gene (*plC*), and result of PCR analysis revealed among 20 isolates that 18(90%) of *ToxA* and *plC* were positive in addition to sensitive enough to be used for the diagnosis of eye infections caused by *P. aeruginosa*, which was also explained the importance of PCR in detection of virulence of *P. aeruginosa* in clinical swabs of eye infections.