SUMMARY

Legionella pneumophila are ubiquitous in the aquatic environment, they live in natural waters and can be found in airconditioning cooling towers water, airconditioning condensate and water reservoirs.

Although they constitute only a small proportion of total bacterial count, *L. pneumophila* and other members of legionellae can cause severe pneumonias or acute respiratory insufficiency. It is now considered as one of the nosocomial agents.

The aim of the present work was to study the presence of *L. Pneumophila* at Benha University hospital and its role as one of the causative organisms, causing nosocomial pneumonia. This was achieved by complete bacteriological examination for the hospital environmental and clinical samples to isolate and identify *L. pneumophila* by culturing these samples on buffered charcol yeast extract agar,biochemical identification ,and serological identification. Genotyping of the isolated strains was done by restricted endonuclease analysis. In addition the cytopathogencity of the isolated strains in cell line tissue culture was studied.

In this work both hospital environmental and clinical samples were studied. The environmental samples (150) were collected from Benha University hospital, 100 samples from faucets of water, 20 samples from showers, 20 sampies from air conditions, 5 samples from respirator and 5 from humidifires.The clinical samples (100) were collected from in patients with clinically diagnosed nosocomial pneumonia.

It was found that:

A- Environmental samples:

- 5 strains (62.5%) of positive environmental samples were isolated from faucets, 2 strains (25%) from airconditions, and one strain (12.5%) from showers.
- 4 strains (50%) of environmental samples were isolated by swab method, 2 strains (25%) by water sampling method after centrifugation and 2 strains (25%) after membrane filtration method.
- General Medicine Department showed the highest percentage of legionella isolates.4 strains (50%) of positive environmental samples were isolated from this Department and distributed as follows: 2 strains from faucets, 1strain from airconditions and 1strain from showers. This may be due to the large number of airconditions and lack of practical control measures.
- The prevalence of legionella in sources of hospital water supply may be due to type of pipes, lack of effective chlorination and cleaning of water.

B- Clinical samples:

- Two strains were isolated : one from sputum sample and the second from pleural effusion.

C- Latex agglutination test showed that 6 of positive legionella isolates belonged to S_1, and the other 4 strains belonged to S_2.

D- The endonuclease electrophoretic digestion patterns of the two patients isolates and the faucet strains from General medicine departement at Benha University are indistinguished from one another in EcoRI and HindIII digests pattern D .As identical or nearly

identical restriction endonuclease profiles were observed in these strains of different L.pneumophila serogroups.Within serogroup1, three very different restricted digested pattern were observed among the studied 6 strains of serotype 1.

The other environmental isolates have unique electrophoretic digestion pattern.Pattern A , pattern B and pattern Ç .As the strains were distinguishable from one another in EcoRI and Hind III digests.

E- The ten *L.pneumophila* strains were tested for their cytopathogencity in monolayer vero cell lines. All the isolated strains of *L. pneumophila* induced rounding of the cells with circumscribed zone of cell lysis. This cytopathic effect increased with time (after 2 days of inoculation).