

Isolation and Identification of Mycoplasma from Eye Infection Diseases

Ghaidaa J. Al-Ghizzawi¹, Zahraa H. Thjeel², Layla Naser Harb³

¹Prof., ²Assist. Lec., ³Lec., Biology Dept., College of Education for Pure Science - Basra University/Iraq

Abstract

The aim of this research was to identify the role of mycoplasma bacteria in eyes infections. A 100 samples were isolated from patients whom suffering from eye infections for 2nd Jan - 30th June 2018 . The clinical isolates were cultivated on mycoplasma media . Biochemical tests were then performed. Three types of mycoplasma were isolated (*M.pneumoniae*in 42 cases, *M.salivarium*in 30 cases & *M.hominis*in three cases). Six cases were recorded single infection . The highest incidence of mycoplasma in the age group (11-20 years).

Keywords: Infection diseases; eye; *M.pneumoniae*; *M.salivarium*

Introduction

The eye is the sensory organ of living organisms, which is influenced by many different environmental factors and conditions may cause damage or injury to the eye⁽¹⁾. Microorganisms can cause eye infections, causing many diseases, including Conjunctivitis, which invade any part of the eyeball or surrounding area ⁽²⁾. The lesions include the anterior part of the cornea, the wet membrane, the outer lining of the eye and the inner conjunctive eyelids), some of which extend to the inner parts of the lower and upper eyelids, causing severe damage to the eyes⁽³⁾.

The normal flora is found in most external parts of the eye, such as eyelids and conjunctiva and may also be present in the internal parts, reinforcement eye immunity for its important defense role by inhibiting the growth of the most common bacterium strains⁽²⁾ and bacterial species that cause extensive damage to the eyes. *Streptococcus hemolyticus*, *Hemophilus influenza*,

Pseudomonasaeruginosa, *Neisseria gonorrhoeae* & *Staphylococcus aureus*⁽⁴⁾.

Some types of mycoplasma species effected on eyes with many infections such as conjunctivitis, blurred vision, double vision, vproblems with glasses or medical lenses, increased sensitivity to light, spots in the eyes, dryness and aquatic eyes. Temporary for adults and children⁽⁵⁾. Mycoplasma has only a plasma membrane distinct from other bacteriostatic species by not possessing the cell wall⁽⁶⁾, which is not sensitive to penicillin and beta-cam⁽⁷⁾ beta-lactam) and are weak for the gram dye but are classified as Gr^{-ve}, spherical form or thread ⁽⁸⁾. Mycoplasma cause many diseases for humans, animals and plants ⁽⁹⁾.

Materials and Method

A 100 swabs were collected patients with eye infections of all age groups, both genders from Basra General Hospital, Al-Sader Educational Hospital, Al-Fayhaa General Hospital Al-Mawani Hospital in Basra Governorate, in addition to private clinics and 50 control samples from healthy persons. Swabs cultivated on Monophasic Diphasic Culture Setup (MDCS)(10). After that, colonies stained with nigrosin stain .

Biochemical test for Mycoplasma: Several biochemical tests were used⁽¹¹⁾, diagnosis of byfermentation of carbohydrates, arginine deaminase,

Corresponding Author:

Ghaidaa J. Al-Ghizzawi

Prof., Biology Dept., College of Education for Pure Science - Basra University/Iraq

e-mail: warkajasem@yahoo.com

coagulated serum digestion, casein digestion, hemolysis test, phosphatase test, film and spot in egg yolk, urease test, hem adsorption tetrazolium reduction test and gelatin liquefaction.

Result

A 100 samples by 3 swabs from each sample of the infected eyes and those who showed symptoms of inflammation of the eyelids and conjunctivitis and blockage of the lacrimal system and inflammation of the cornea and solid. MDCS used to isolate and demonstrate the role of mycoplasma in the eye infection diseases (incidence of conjunctivitis, inflammation of the eyelids

and inflammation of the cornea). Three species of Mycoplasma were isolated (75%).

The colonies of Mycoplasma appeared 48-72 hours like fried egg. *M.pneumoniae* colonies appeared in sphere (figure 1). Whereas, the colonies of *M.saliverium* appeared cocci (figure 2). *M.hominis* appeared in a convex spherical (figure 3). This is the first study in Iraq which isolated Mycoplasma from eye infections. This method is fast result for positive isolation by changing the color of the liquid medium from orange to yellow during 24 hours after that colonies appeared on the upper phase of the MDCS.

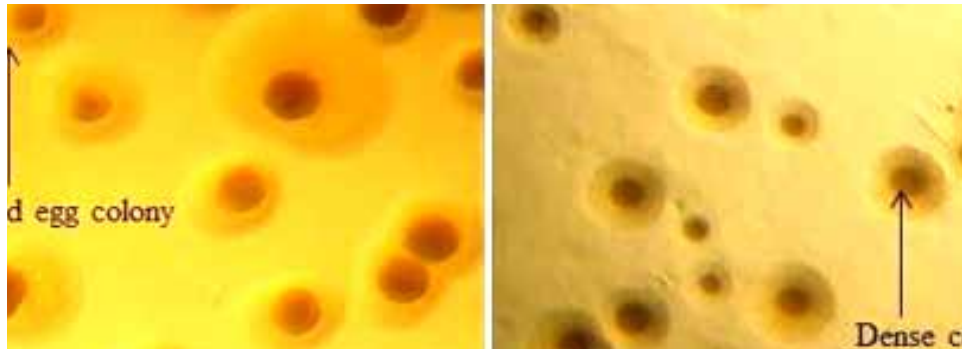


Figure (1): Colonies of *M.pneumoniae* (100×)

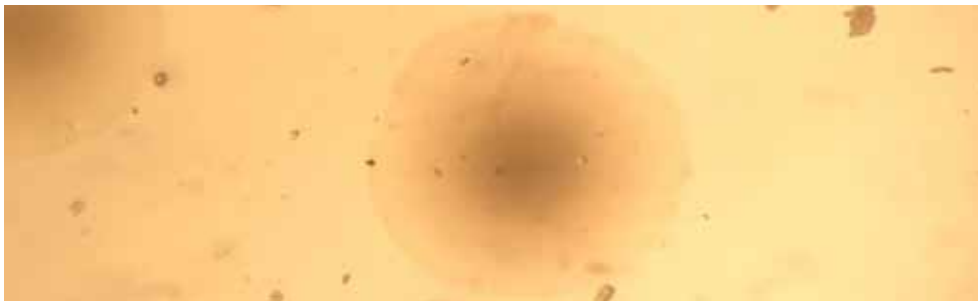


Figure (2): Colonies of *M.saliverium*

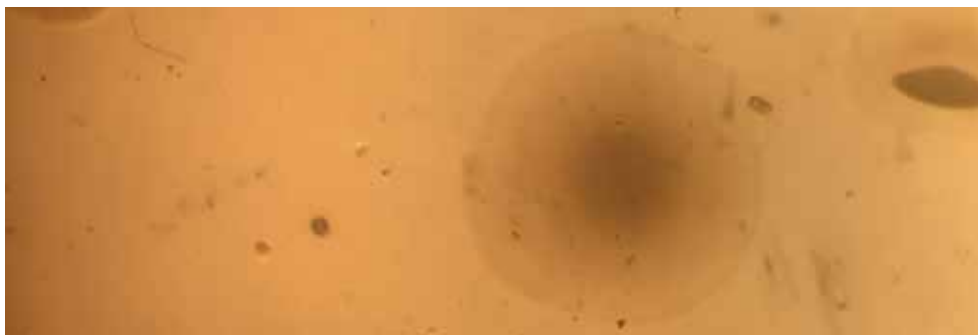


Figure (3): Colonies of *M.hominis*

Diagnosis of Mycoplasma species explain in table 1.

Table (1): Biochemical testsfor diagnosis mycoplasma species.

Mycoplasma spp.	Glucose Fermentation	Arginine Hydrolysis	Urea test	Tetra-zolium reduction Ae/An	Hemo-lysis	Phos-phatase test	Casein diges-tion	Gelatin liquefac-tion	Film or spot in egg youk	Serum Coagu-lated	Hemad-sorbtion
M.pneumoniae	+	-	-	+/+	β	-	-	-	-	-	+
M.salivarium	-	+	-	-/W	-	+	-	-	+	-	-
M.hominis	-	+	-	-/-	-	-	-	-	-	-	-

β : Complete hemolysis of erythrocytes; A/An : Aerobic/Anaerobic; W : Weak

Distribution of Mycoplasma which isolated within the study according to species: The highest incidence of *M. pneumoniae* was in 42 cases (56%), of which 4 were single (9.6%), 38 (89.4%), followed by *M. salivarium* isolated single infection in 2 cases (6.6%) and 28 cases with mixed infection (93.4%)

Figure (4) explain mycoplasma distribution among study patients. The second group (11 – 20 years) recorded highest percent in mycoplasma isolation but the last group (61 – 70 years) recorded lowest percent.

M. hominis isolated only in the first group (0 – 10 years).

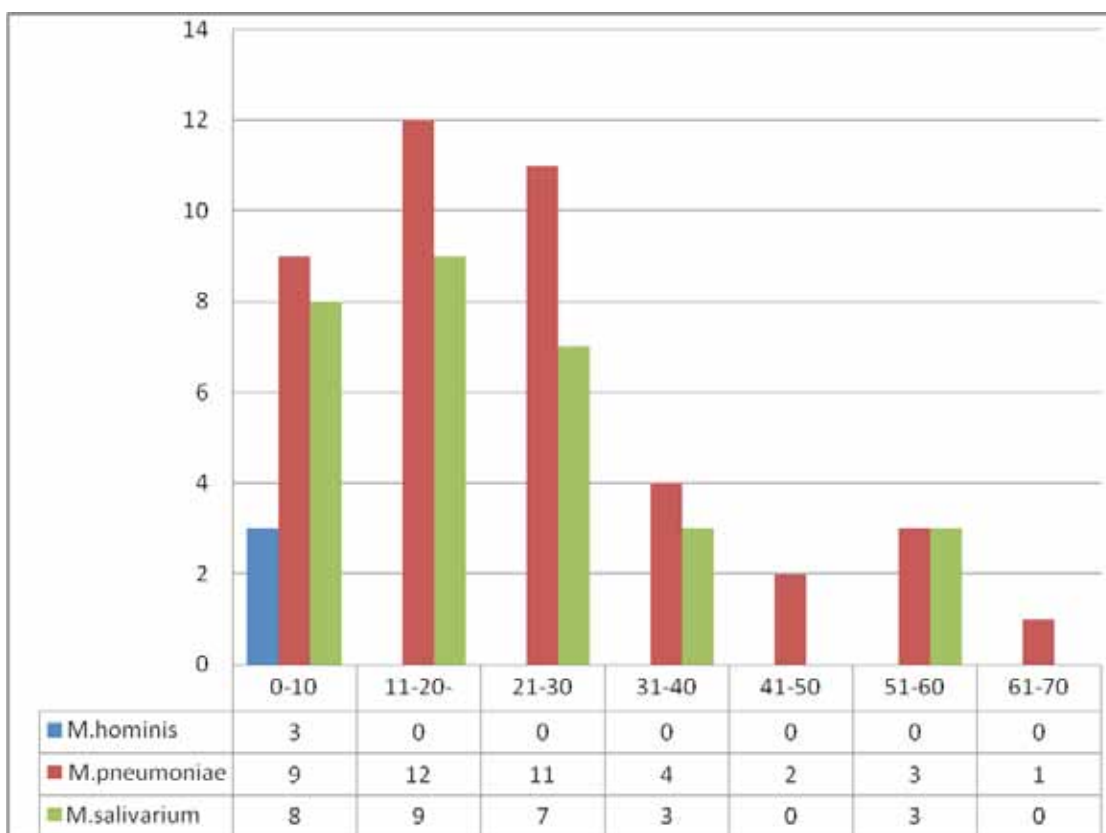


Figure 4 : Distribution of mycoplasma depending on patients age

Discussion

Mycoplasma lack cell wall and it is causative agents for many diseases . In this study we isolate 3 species of mycoplasma (*M. pneumoniae*, *M. salivarium* & *M. hominis*).

It is the first study in Iraq which isolate mycoplasma from eye infections (conjunctivitis, inflammation of the eyelids and inflammation of the cornea) .

This study agree with the study of ⁽¹²⁾, which found that *M. pneumoniae* are common cause of eye injuries,

causing conjunctivitis, optic neuritis and iris. In⁽¹³⁾ isolate *M.salivarium* from joints of septic arthritis patient also, in⁽¹⁴⁾ diagnosed *M.salivarium* from mouth ulcer patients. The results of the study showed that *M.hominis* were isolated from eye injuries by (4%) agree with the study of⁽¹⁵⁾ which isolated from newborns and their mothers which suffering from genital inflammation.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq

Conflict of Interest: Non

Funding: Self-funding

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