

Mycoplasma Pneumoniae

Mycoplasma pneumoniae is a small bacterium with a unique cell structure that causes mycoplasma pneumonia. This species lacks a peptidoglycan cell wall, and instead has a cell membrane with sterol compounds that it obtains from the host serum. Because it requires sterols for replication, it requires special growing medium called Eaton's agar, and also has a distinctive growth pattern, forming characteristic mulberry colonies. This organism causes mycoplasma pneumonia, also known as walking pneumonia, which is an atypical pneumonia spread through respiratory droplet transmission. It is called an atypical pneumonia because there is a protracted course, lack of sputum production, and extra-pulmonary symptoms as compared to typical pneumonia. This form of pneumonia is more common in adolescents and people in close quarters like military recruits. *Mycoplasma pneumoniae* is also characterized by the presence of IgM antibodies directed against red blood cells, leading to a cold autoimmune hemolytic anemia in some patients. Complications of this disease also include erythema multiforme, which can progress to Stevens-Johnson syndrome. Because the causative organism lacks a cell wall, it does not gram stain and is also resistant to the effects of penicillins and beta-lactam antibiotics, which have bactericidal effects by disrupting the cell wall. Therefore, antibiotics like tetracycline and erythromycin are used instead.



PLAY PICMONIC

Characteristics

No Cell Wall and No Gram Stain

[Anti-sign on Graham-cracker stain on brick wall](#)

This species lacks a peptidoglycan cell wall, and instead has a cell membrane with sterol compounds that it obtains from the host serum. Because this organism lacks a cell wall, it does not gram stain.

Cholesterol Membrane

[Cholesterol burger with membrane](#)

This species lacks a peptidoglycan cell wall, and instead has a cell membrane with sterol compounds that it obtains from the host serum.

Eaton's Agar

[Eating](#)

Because this organism requires sterols for replication, it requires a special growing medium, called Eaton's agar.

Mulberry Colonies

[Mulberry](#)

This organism replicates slowly by binary fission, and produces characteristic mulberry colonies on agar plates. Other *Mycoplasma* species, such as *M. hominis*, have a "fried-egg" appearance.

Disease

Atypical pneumonia

[A-tipi X-ray Screen on Nude-Mona](#)

This organism causes mycoplasma pneumonia, also known as walking pneumonia, which is an atypical pneumonia spread through respiratory droplet transmission. It is called an atypical pneumonia because there is a protracted course, lack of sputum production, and extra-pulmonary symptoms as compared to typical pneumonia.

Military Recruits

Military-outfit

This form of pneumonia is more common in adolescents and people in close quarters, like military recruits.

Cold IgM Autoimmune Hemolytic Anemia

Cold-freeze-gun (IgM) Mountain-goblin with Hemolysing-RBCs from Anemone

Mycoplasma pneumoniae is characterized by the presence of IgM antibodies directed against red blood cells, leading to a cold autoimmune hemolytic anemia in some patients.

Erythema Multiforme

Red-Earth with Multiform-mullet

Erythema multiforme (EM) is an acute, immune-mediated, self-limited, and sometimes recurring skin condition that is considered to be a type IV hypersensitivity reaction associated with some infections, such as HSV, Mycoplasma pneumoniae or medications. It is characterized by the appearance of distinctive target-like lesions on the skin. While Mycoplasma pneumoniae has been known to cause both EM and Steven-Johnsons syndrome (SJS), EM and SJS are to be considered as two different spectra of disease processes.

Treatment

Tetracycline

Tetris-cycle

Because the causative organism lacks a cell wall, it is resistant to the effects of penicillins and beta-lactam antibiotics, which have bactericidal effects by disrupting the cell wall. Instead, antibiotics like tetracycline, which inhibit bacterial growth by inhibiting attachment of aminoacyl tRNA to the 30S ribosomal subunit, are effective against this organism.

Erythromycin

Earth-throw-mice

Because the causative organism lacks a cell wall, it is resistant to the effects of penicillins and beta-lactam antibiotics, which have bactericidal effects by disrupting the cell wall. Instead, antibiotics like erythromycin, which bind to the 50S subunit, are effective against this organism.