

Please read this section first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a "Journal Club" activity. This means that you must record those attending for CEU purposes. Thistle will not issue a certificate to cover these activities, nor send out "correct" answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT- 16/009**

Each attendee should claim THREE CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

MICROBIOLOGY LEGEND

CYCLE 41 ORGANISM 2

Morganella Morganii

Morganella Morganii is a species of gram negative bacteria. It has a commensal relationship within the intestinal tracts of humans, mammals and reptiles as normal flora. Although *Morganella Morganii* has a wide distribution, it is considered an uncommon cause of community acquired infection and it is usually encountered in post-operative infections, pyogenic infections, central nervous system infections and most commonly urinary tract infections.

Epidemiology, pathogenesis and Clinical Features

This species is facultatively anaerobic and oxidase negative. Its colonies appear off-white and opaque in colour when grown on agar plates. Their cells are straight rods about 0.6 – 0.7 micrometres in diameter and 1.0 – 1.7 micrometres in length which are best grown on MacConkey's and sheep blood agar. Their mobility is through their peritrichous flagella but some strains do not develop flagella at 30 Degrees Celsius.

They produce the enzyme catalase and thus they are able to convert hydrogen peroxide to water and oxygen. This is a common enzyme found in most living organisms. They are also indole test-positive which enables them to split tryptophan to indole, pyruvate and ammonia. Methyl red tests positive in *Morganella Morganii*, an indicator dye that turns red in acidic solutions. Other characteristics of *Morganella Morganii* include that they have the capacity for urease production, they can ferment mannose and they have the enzyme ornithine decarboxylase

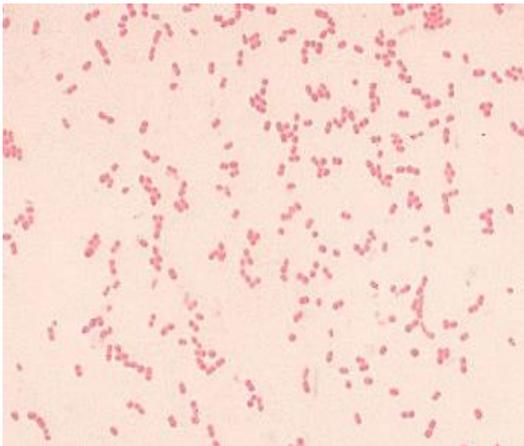
Morganella Morganii is the third member of the tribe Proteeae (normal faecal flora that often causes infection in patients whose normal flora have been disturbed by antibiotic therapy) of the family Enterobacteriaceae. The other members of the tribe are *Proteus* and *Providencia* as they share similar biochemical and clinical characteristics.

Historical identification and systematics

Morganella Morganii was first described by a British bacteriologist H. de R. Morgan in 1906 as Morgan's bacillus. Morgan isolated the bacterium from stools of infants who were noted to have had "summer diarrhea". Later in 1919, Winslow named Morgan's bacillus, *Bacillus Morganii*. In 1936, Rauss renamed *Bacillus Morganii* as *Proteus Morganii* and then finally in 1943 Fulton showed that *Bacillus Columbensis* and *Proteus Morganii* were the same and defined the genus *Morganella* due to the DNA-DNA hybridization.



Blood Agar with Morganella Morganii colonies



Morganella Morganii Gram stain – Gram Negative bacterium

Treatment

Therapeutic choices for infections due to *Morganella Morganii* are primary based upon in vitro susceptibility, since little information is available from clinical trials. The antibiotic choice depends upon the site of infection, the nature of the host and the local pattern and prevalence of resistance, however the following antibiotics are of common choice for the treatment for *Morganella Morganii* infections :Ticarcillin, Piperacillin, Ciprofloxacin and third and fourth generation of Cephalosporins. There is approximately a 92% success rate for treatment when using these antibiotics. Once appropriate therapy is initiated against *Morganella Morganii* infections, patients if febrile initially, should defervesce in 48-72 hours. In cases of urinary tract infections, failure to defervesce should prompt an evaluation of the kidney to exclude any obstruction to the collecting system and or any abscesses. Deep wound infections should also be evaluated for any underlying osteomyelitis. Generally there will still be a little need for follow up cultures to document bacteriological cure if the patient responds clinically.

References

1. <http://en.wikipedia.org/w/index.php?>
2. <http://bacdiv.e.dsmz.de/index.php?search=4986&submit=search>
3. <http://www.antimicrobe.org/b115.asp>

Questions

1. What is the most common encounter of *Morganella Morganii*?
 2. Discuss the Proteaeae tribe and name the three members of it.
 3. What steps has to follow after a patient has been given antibiotics for *Morganella Morganii* for a urinary tract infection and why?
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