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CORONAVIRUS (COVID-19) and UBC's response: Information and FAQs here.

FEATURE CASE

Mycobacterium Avium Complex (MAC) Recurrence – Revisiting the Need for Retreatment

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Rhonda is a 74-year-old female who self-referred to the Pharmacists Clinic following recent confirmation of a mycobacterium avium complex (MAC) reinfection. Rhonda's respirologist advised her to consider retreatment with antibiotic therapy, but the details of the antibiotic regimen were not discussed. Alternatively, he proposed a "watchful waiting" approach. Rhonda's goal for the visit was to discuss if retreatment with antibiotics was necessary for a MAC recurrence.

Rhonda's past medical history includes: chronic neuropathic pain, Parkinson's Disease, hypertension, essential thrombocythemia, chronic rhinitis, mild bronchiectasis, and MAC infection in 2007. She is retired and lives at home with her husband. Rhonda describes a healthy diet and regularly cycles and hikes for exercise. She sees value in prescription medications to manage her medical conditions.

Her medication regimen includes:

Amlodipine 2.5mg daily for hypertension
Hydroxyurea 500mg daily for essential thrombocythemia
Levodopa/carbidopa 150mg/37.5mg three times daily for Parkinson's disease
Pregabalin 75mg three times daily for chronic neuropathic pain
Ipratropium 42mcg into each nostril three times daily for chronic rhinitis
ASA 81mg daily for thrombosis prevention
Psyllium fibre 5g daily for constipation
Sennosides 8.6mg as needed for constipation

Over the past few months, Rhonda noticed increased coughing and sputum production. Bronchoscopy and sputum cultures were positive for MAC infection. Rhonda's past medical records indicated that her first MAC infection was treated with a 12-month course of azithromycin, ethambutol and rifampin, the recommended regimen for a macrolide susceptible MAC infection.^{1,2} Rhonda recalled that during that year of treatment, she did

not experience any major side effects.

MAC infection of the lung is commonly caused by *Mycobacterium avium*, *Mycobacterium intracellulare* and *Mycobacterium chimaera*.³ Signs and symptoms include cough, chest discomfort, weakness, and fatigue.^{1,2,3} Risk factors for developing MAC infection include people who are immunocompromised and with pre-existing respiratory conditions such as chronic obstruction pulmonary disease, cystic fibrosis, bronchiectasis, and previous tuberculosis infection.^{1,2,3} Rhonda's main risk factors for a MAC reinfection include a previous MAC infection and her history of mild bronchiectasis.

Antibiotic therapy is assessed on an individualized basis and may not always be necessary.^{1,2} Close observation ("watchful waiting") rather than antibiotic treatment is often appropriate if the patient is not at high risk of disease progression, but this decision typically requires the expertise of a respirologist or infectious disease (ID) specialist.² The goals of therapy include curing the infection and minimizing associated pulmonary symptoms.^{1,2} For a macrolide susceptible MAC infection, the recommended treatment includes a combination of a macrolide, rifamycin and ethambutol for a duration of at least 12 months.^{1,2} Unfortunately there is limited evidence regarding the treatment of macrolide-resistant MAC infections, therefore consulting ID and considering local antibiotic resistance patterns are usually necessary.^{1,2}

After treatment, patients are encouraged to have ongoing sputum culture tests every 6 months to monitor for recurrence, which one study suggests may be as high as 48% after completion of antibiotic treatment.^{1,2,4} Treatment of a recurrent infection is the same as for a new infection, and each case should be assessed for appropriateness of antibiotic therapy and macrolide resistance.^{1,2}

On follow-up, we provided Rhonda with more information on MAC treatment and reviewed the implications of adding antibiotics to her current medication regimen. Although she recalls tolerating her first round of treatment, we reviewed possible side effects associated with the prolonged use of antibiotics, such as antibiotic-associated diarrhea, hepatotoxicity and interstitial pulmonary disease. We flagged one drug interaction (rifampin/amlodipine) for discussion. As rifampin is considered a strong CYP3A4 inducer, concurrent therapy can lead to increased metabolism of amlodipine and reduced efficacy for hypertension management.^{5,6} This interaction was explained to Rhonda and she was agreeable to keep a closer eye on her blood pressure.

After learning more about the antibiotic regimens, Rhonda said she is open to retreatment if her symptoms progress, but would prefer a watchful waiting approach for now. She was grateful for all the education and additional information provided and said she felt more knowledgeable and well equipped for her upcoming visit with the respirologist.

Therapy with combination antibiotics for prolonged durations can negatively affect a patient's quality of life through potential adverse effects, drug interactions and increased pill burden. Pharmacists can play a critical role in resolving drug interactions and managing side effects, but equally as important is the value of a pharmacist's support through education

References

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A CLOSER LOOK

In Conversation with Dr. Jamie Yuen

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At the Pharmacists Clinic, our team has adopted the mindset that we are lifelong learners and seeks opportunities to learn from one another. This case raised questions about preparing for appointments, supporting patients in their decision-making process and ongoing monitoring. I had the opportunity to sit down with my colleague, Dr. Jamie Yuen, for a closer look.

Pharmacists are known to prepare as much as they can prior to a patient appointment. In this case, MAC infection is a complex topic that may be unfamiliar to many pharmacists. Without knowing the patient's exact questions in advance, how do you manage situations where you have prepared for one discussion and, in the appointment, the patient wants to talk about something else?

In our practice, patients occasionally veer off topic and end up talking about something other than their chief complaint or stated goal for the appointment. While tangential topics, especially those we are unfamiliar with, may be intimidating at first, over time we have learned to navigate through the unexpected. In this situation, many detailed questions about MAC reinfection came up during the appointment that I wasn't prepared to answer it on the spot. I told the patient I would look into her questions and she was receptive to waiting for a researched response.

Depending on the situation and the question, sometimes I may quickly check my standard references during an appointment if I feel confident that I can find a quick answer. For example, looking up supplement details in [TRC Natural Medicines](#). For a more in-depth question, I'll acknowledge that I do not have the answer available at the moment, but am happy to look into it and share my findings at a follow up appointment or via email. Patients are usually very appreciative of the time we spend conducting research to help them.

As pharmacists, we may feel pressured to be able to answer everything on the spot, but that is impossible, particularly since information is constantly changing. Being a general practice clinic means that any topic is fair game for us. One process we implemented was requesting our patients complete a pre-appointment intake form, which helps us prepare as best we can.

Are there any other “standard references” you rely on during patient appointments to help you answer questions?

I routinely access [UpToDate](#) and [Dynamed](#) for a quick review of current available evidence and best practices. They both have their strengths in terms of how they disseminate information that is easily interpreted and applied to patient cases. [RxFiles](#) and [Lexicomp](#) are also common references I'll access if I am looking for specific information on formulations, side effects and drug interactions. I am fortunate to have access to the UBC Library catalogue of journals and indexes when I need to conduct a more robust literature search.

You mention that antibiotic treatment is not always necessary for a MAC infection or recurrence. What individual factors are considered when determining whether to treat or not?

Patients may be concerned about taking triple antibiotic therapy for a year due to potential side effects and drug-drug interactions. Pharmacists can help patients balance their personal values, past experiences with medications and severity of symptoms against the potential benefits that treatment can provide for them, such symptom relief or improved quality of life. There are also other specific diagnostic and prognostic factors related to this infection that need to be considered, but this is outside the scope of pharmacy and should be deferred to a specialist.

Can you tell us what happened to Rhonda? Did she choose to pursue retreatment and have you followed up with her since?

On our third follow up appointment, Rhonda reported that she and her respirologist decided to delay treatment with antibiotics and utilize a watchful waiting approach. They have another follow-up in a couple of months, but since I am also supporting Rhonda in

optimizing some of her Parkinson's medications, I can inquire about her respiratory symptoms in our follow-up appointments and let the respirologist know if there is any significant worsening or change in symptoms.

Note

Each case study has been peer reviewed and qualifies as a non-accredited learning activity (CE-Plus) within the annual professional development requirement for licensure by the College of Pharmacists of British Columbia.

Your Responsibility

The recommendations in this case are based on the views of our clinicians after careful consideration of the best available evidence and needs of a specific patient. As a health care professional, you will assess each of your cases based on the patient's unique circumstances and in consultation with the patient and their care team.

If you would like to discuss one of your patients with us please [contact](#) the Clinic team.



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