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CASE REPORT Open Access

Bifocal malakoplakia in a patient living with HIV: case report

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Abstract

Background Malakoplakia is a rare chronic granulomatous disease characterized by the presence of Michaelis-Gutmann bodies (MGBs) within histiocytic aggregates. It predominantly a□ects immunocompromised individuals, including those living with Human Immunodeficiency Virus (HIV).

Case Presentation We present a unique case of bifocal malakoplakia in a 49-year-old man, previously with Coronavirus disease 2019 (COVID-19) and HIV positive, presented with respiratory symptoms, weight loss, and lymphadenopathy. He had various infections including Non-Tuberculous Mycobacteria (NTM), Cytomegalovirus (CMV), and Candida, with evolving lung and gastrointestinal issues. Despite treatment attempts, he deteriorated due to respiratory distress, multi-organ failure, and coagulopathy, leading to his unfortunate demise.

Conclusion This report presents a distinctive and complex case of malakoplakia in an HIV-positive patient, a rare inflammatory disorder originally described by Michaelis and Gutmann in 1902. The hallmark Michaelis-Gutmann organisms were observed, confirming the diagnosis. While typically a□ecting the urinary tract, this case demonstrates the exceptional ability of malakoplakia to manifest in various organ systems, including pulmonary, gastrointestinal, and more. Although Escherichia coli is a prevalent associated pathogen, the exact cause remains elusive. Treatment, often involving surgical excision and antibiotic therapy, underscores the challenging nature of managing this condition in immunocompromised individuals.

Keywords Malakoplakia, HIV, CMV, Rhodococcus equi, SARS-CoV-2

Background

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Table 1 Laboratory results

Test/ Normal range	First admission March 2021	Second Admission June 2021
WBCs (4-1110^9/l)	10.1	9.04
Hemoglobin (125–180)	86 g/L	54 g/L
Mean cell volume(75–95)	85 fl.	88 fl.
Platelets count (150–350 1110^9/l)	342	143
Neutrophils count (1.8–7.5 10^9/l)	8.8	7.8
Lymphocytes count (1.5-4.0 10^9/l)	0.6	0.39
Sodium (136–145)	133 mmol/L	131 mmol/L
Potassium (3.5–5.1)	3.5 mmol/L	3.4 mmol/L
Urea (2.8–8.1)	6.6 mmol/L	6.0 mmol/L
Creatinine(59–104)	51 mmol/L	51 mmol/L
Corrected Calcium (2.15–2.5)	2.62 mmol/L	2.42 mmol/L
Albumin (35–52)	21 g/L	17 g/L
Total bilirubin (2–21)	20 umol/L	11 umol/L
Alkaline phosphatase(40–129)	511 U/L	447 U/L
Alanine aminotransferase(5–41)	60 U/L	23 U/L
Gamma GT (8–61)	189 U/L	Not done
C-reactive protein (0–6)	160 mg/L	117.36 mg/L
ESR (0–15)	113 mm/hr	102 mm/hr
Procalcitonin (≤ 0.5)	0.48 ug/L	0.34 ug/L
COVID19 PCR	Positive	Positive
ANA	Positive	Not done
ANCA	Positive p-ANCA Negative c-ANCA	Not done

Case presentation

pseudomonas aeruginosa

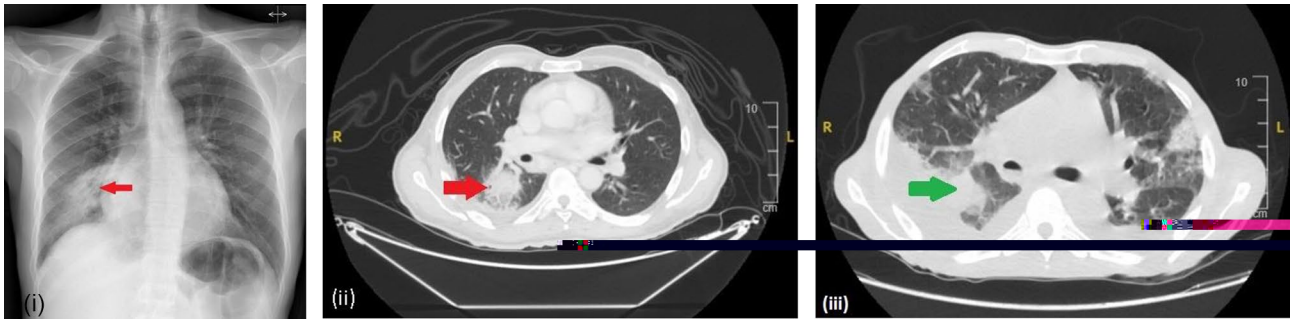


Fig. 1 Image (**i**) A chest radiograph upon arrival of the first admission, demonstrates a right lower zone infiltration with a small cavitary lesion. Image (**ii**) CT chest of the first admission, demonstrate a 2.7 × 3 cm heterogenous enhancing soft tissue lesion compressing the right lower lobe segmental bronchus (red arrows). Image (**iii**) CT Chest of the second admission, show the evolving right lower lobe mass reaching 10.3 × 10.5 cm making more compression on the right lower segmental main bronchus (green arrows) with the presence of air pockets as demonstrated as shown in images

Table 2 Bronchoalveolar lavage (BAL) results of the first admission

Bacterial culture	No growth
Fungal culture	Candida glabrata
Acid fast bacilli smear	Three sample were taken and two turned to be weakly positive
TB PCR	Negative
TB culture	Pending (turned to be positive for Non-Tuberculous Mycobacterium after 8 weeks in August 2021 and the patient passed away in July 2021).
Respiratory panel PCR	Negative
Cytology	Negative for malignancy and special fungal stain turned to be negative.

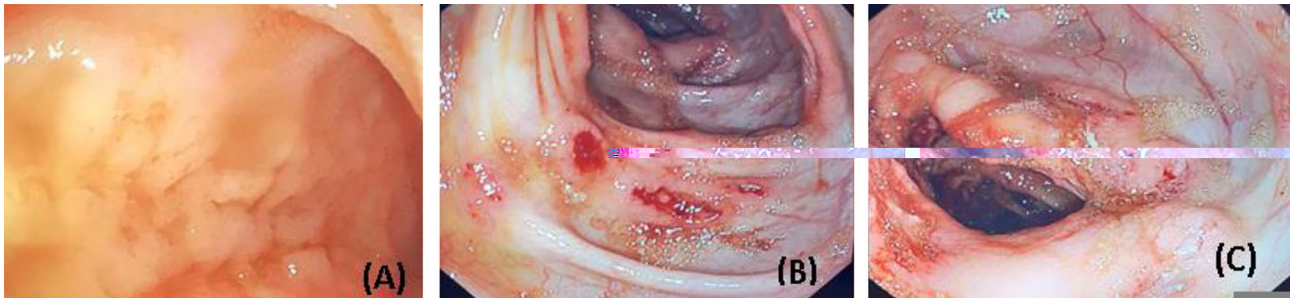


Fig. 2 Gross endoscopic appearance of the right colon showing the cecal base at ileocecal valve with deformed looking. Multiple ulcers ranging between 5 mm and 1 cm in diameter with noticed with raised edges and whitish base. Some ulcers were oozing blood and others were covered by clots

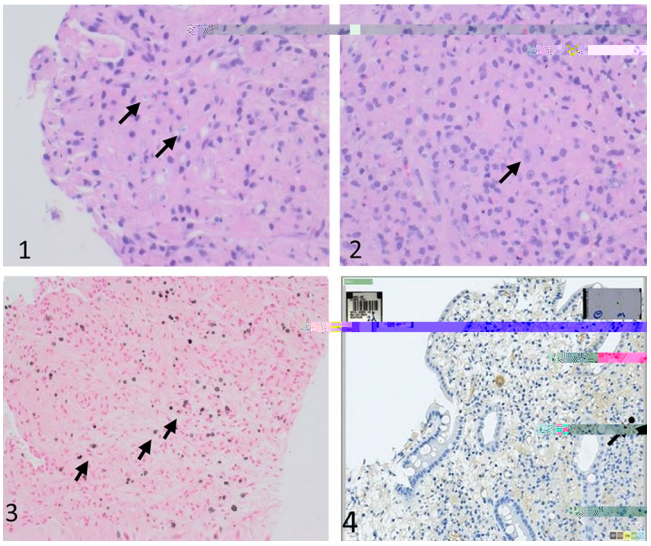


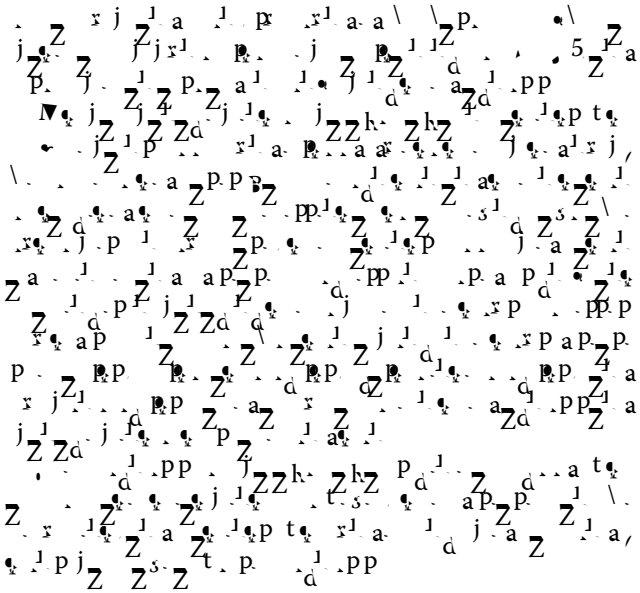
Fig. 3 (**1**) Malakoplakia. High magnification view showing epithelioid histiocytes with abundant eosinophilic cytoplasm and intracytoplasmic round basophilic targetoid inclusions (Michaelis-Gutmann bodies) (arrows), diagnostic of malakoplakia(Lung). (**2**) Malakoplakia. High magnification view showing colonic epithelium with underlying epithelioid histiocytes (arrow) with abundant eosinophilic cytoplasm(Colon). (**3**) The Michaelis-Gutmann bodies are highlighted with a von Kossa stain. (**4**) Immunostaining for CMV is POSITIVE

Rhodococcus equi *Escherichia coli* *Klebsiella pneumoniae* *Proteus mirabilis*

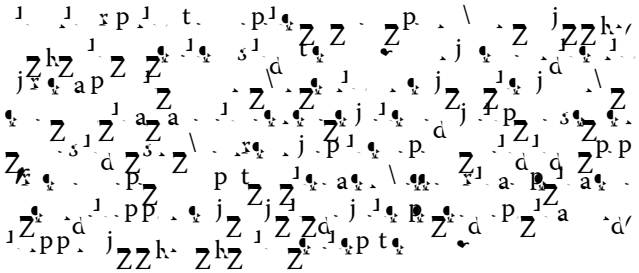
Discussion

Table 3 Proven HIV cases with malakoplakia

Reference	Age	Sex	Country	Immune status/ CD4 count cells/ cubic millimeter	Symptoms	Location	Culture	Medication received	Outcome
[5]	52	Male	Czech Republic	AIDS/ not reported	Productive cough and fever	Pulmonary	Rhodococcus equi	Not reported	Not reported
[6]	41	Male	United States	AIDS/ 44	Mass on scalp	Brain	No organism identified	Ciprofloxacin, Trimethoprim-sulfamethoxazole	Cure
[7]	39	Male	France	AIDS/ 5	Fever, weight loss, chronic diarrhea	Colon	Shigella boydii	Clarithromycin, ciprofloxacin	Cure
[8]	25	Male	Mexico	AIDS/ 7	Productive cough, weight loss	Pulmonary	Rhodococcus equi	Rifampicin, vancomycin, ciprofloxacin	Cure
[9]	45	Female	India	AIDS/ 173	Skin ulcer	Cutaneous	Staphylococcus Aureus	Ciprofloxacin	Cure
[10]	30	Male	United States	AIDS/ 35	Productive cough, weight loss and fever	Pulmonary	Rhodococcus equi	Rifabutin, azithromycin	Lost follow up
[11]	47	Male	United States	AIDS/ 33	Stridor and non- productive cough	Trachea	Rhodococcus equi	Rifampicin, azithromycin	Relapsed
[12]	45	Male	United States	AIDS/ not reported	Not available	Pulmonary	Rhodococcus equi	Not reported	Cure
[13]	25	Male	United States	AIDS/ not reported	Dyspnea, fever, cough, weight loss	Pulmonary	Rhodococcus equi	Rifampicin, erythromycin	Cure
[14]	49	Male	France	AIDS/ not reported	Not available	Pulmonary	Rhodococcus equi	Erythromycin, netilmicin	Died
[15]	45	Male	Canada	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Vancomycin, imipenem, doxycycline, erythromycin	Cure
[16]	40	Male	South Korea	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Not reported	Not reported
	45	Male	South Korea	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Not reported	Not reported
	50	Male	South Korea	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Not reported	Not reported
	50	Male	South Korea	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Not reported	Not reported
[17]	34	Male	France	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Vancomycin, imipenem, rifampicin, clarithromycin, teicoplanin	Cure
[18]	36	Female	United States	AIDS/ not reported	Cough, Fever, dysphagia	Pulmonary	Rhodococcus equi	Vancomycin, erythromycin	Lost follow up
[19]	49	Male	United States	AIDS/ not reported	Cough, fever, fatigue	Pulmonary	Rhodococcus equi	Ciprofloxacin	Lost follow up
[20]	37	Male	United States	AIDS/ not reported	Cough, fever, fatigue	Pulmonary	Rhodococcus equi	Not reported	Died
	48	Male	United States	AIDS/ not reported	Cough, fever, chest pain	Pulmonary	Rhodococcus equi	Not reported	Died
[21]	33	Male	United States	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Ciprofloxacin, erythromycin	Died
	41	Male	United States	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Vancomycin, erythromycin	Died
	43	Male	United States	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Erythromycin	Died
[22]	23	Male	Brazil	AIDS/ not reported	Not avialble	Pulmonary	Rhodococcus equi	Erythromycin	Lost follow up
[23]	29	Male	Spain	AIDS/ not reported	Fever, hemoptysis	Pulmonary	Rhodococcus equi	Imipenem, rifampicin, ciprofloxacin, doxycycline	Cure



Conclusion



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Author contributions
M.A. and M.M. Wrote the manuscript. N.E., H.K., S.A. and Y.A. Reviewed the manuscript.

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Data availability
The data that support the findings of this study are openly available.

Declarations

Ethics approval and consent to participate
The authors did not seek approval from an ethics committee.

Consent for publication
Available upon request.

Competing interests
The authors declare no competing interests.

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