



CASE REPORT

Decitabine-Induced Severe Pancytopenia with Black Hairy Tongue in a Patient with Acute Myeloid Leukemia: A Case Report

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ARTICLE INFO ABSTRACT



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Introduction: Decitabine in combination with Venetoclax is widely used in elderly patients with Acute Myeloid Leukemia. Profound myelosuppression is expected; however, unusual mucocutaneous manifestations such as black discoloration of the tongue are rarely documented. It has been established that patients can develop significant side effects, including serious myelosuppression, from treatment with decitabine and venetoclax.

Case Presentation: This clinical report describes the development of a blackish discoloration of the dorsal surface of the tongue (black hairy tongue) in a 66-year-old male AML patient who experienced pancytopenia (a decrease in all types of blood cells) while undergoing decitabine-based chemotherapy with venetoclax. The patient developed black hairy tongue due to profound immunosuppression and experienced the following adverse events during his hospital stay: bacteremia, septic shock, maximum grade of all types of blood dyscrasia, itching, thrush, fecal and urine incontinence, worsening/coughing, fever, and poor mitochondrial activity.

Conclusion: This case study illustrates rare oral complications associated with hypomethylating agents in AML patients with significant dyscrasia and emphasizes the need for close monitoring of all oral healthcare needs for patients who are significantly cytopenic.

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Introduction

Acute myeloid leukemia (AML) is an aggressive malignancy arising from hematopoietic stem cells that primarily affects older adults and typically results in high rates of mortality (Döhner et al., 2015). For patients who are ineligible for intensive chemotherapy, hypomethylating agents like decitabine are frequently employed. Decitabine causes hypo methylation of DNA which leads to maturation of leukemic blast cells, and in the presence of venetoclax may increase the likelihood of achieving remission in patients with newly diagnosed AML (Kantarjian et al., 2012; DiNardo et al., 2020). Although myelosuppression (neutropenia and thrombocytopenia) is a common adverse effect associated with the use of decitabine, it also significantly increases

the risk of infection and mucositis (Lubbert et al., 2012 ; Estcourt et al., 2017).

Oral complications (eg. mucositis, candidiasis and pigmentation) are commonly reported in patients receiving chemotherapy; however, patients receiving chemotherapy could experience a condition called black hairy tongue which is caused by elongation of the filiform papillae and their subsequent darkening. Whereas black hairy tongue can be linked to antibiotic use and immunosuppression, reports of the development of black hairy tongue during treatment with decitabine are rare (Sonis et al., 2004; Gurvits et al., 2014; Schlager et al., 2017).



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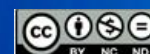
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Case Presentation

A 66-year-old male Patient was initially seen for complaints of easy fatigability and a 15-day history of neck pain and pain in both legs. He has had a total of 7 days worth of these symptoms. He was noted to have severe pancytopenia on blood tests dated 12 July 2024, with hemoglobin level 4.8 g/dL, total leukocyte count 1540 cells/mm³ and platelet count 3000 cells/mm³. Bone marrow aspiration and biopsy on 03 June 2024 demonstrated acute myeloid leukemia (AML) with 22% of the cells being (myeloid) blasts with positivity for anti CD34 and anti CD117, as well as negativity for both anti CD3 and anti CD20. Reticulin stain showed Grade II marrow fibrosis present. Cytogenetic analysis, flow cytometry, karyotyping and AML mutation panel were completed for risk stratification on 15 July 2024. An echocardiogram (ECHO) on that same day demonstrated normal left ventricular systolic function (LVEF 56%) and no regional wall motion abnormalities. Patient was started on hypomethylating therapy with Inj. Azacitidine (100 mg SC once daily). He completed cycle 1 of Azacitidine from 15 July 2024 to 21 July 2024 and cycle 2 from 21 August 2024 to 24 August 2024. He continued treatment and completed up to cycle 13 of Azacitidine in December of 2024.

On 12 October 2024, patient was admitted with a complaint of headache for the past ten days. CT brain done on 11 October 2024 showed bilateral acute on chronic subdural collections with a significant mass effect; this was indicated by the effacement of the cortical sulci and significant narrowing of the ventricles at that time. The laboratory data from the time the patient was discharged showed a hemoglobin level of 8.9 g/dL and an elevated white blood cell count (WBC) of 1,642 cells/mm³. His platelets were low (96,000/mm³), and he had a PT of 11 sec and an APTT of 29 sec. His creatinine level was within normal limits (0.81 mg/dL).

In January 2026, he was admitted for Cycle 1 of his chemotherapy regimen—Inj. Decitabine (induction). The patient had fever and chills and developed sepsis due to chemotherapy-induced pancytopenia. He received broad-spectrum IV antibiotics and antibiotic therapy was subsequently modified based on culture results. He developed anemia and thrombocytopenia requiring supportive transfusions. The patient had perineal pain and swelling while in the hospital, and an incision and drainage procedure was performed; pus cultures grew out *Klebsiella* (a multidrug-resistant organism). Therefore, he received modified IV antibiotics. He developed melena; OGD scopy was postponed due to severe thrombocytopenia, and he was placed on a Foley's catheter in force for pending outpatient removal per urology.

A cranial incision pus discharge was noted and MRI of the brain with contrast was requested to be performed on outpatient basis. The patient was discharged home, hemodynamically stable with a catheter in situ and outpatient follow-up. On 24/02/2026, he developed severe thrombocytopenia (platelets 7,000 cells/mm³) with black discoloration of the tongue (Fig 01) and was transfused with four pints of random donor platelets. Naranjo scale score was 2, indicating a possible adverse drug reaction, likely secondary to Decitabine-induced marrow suppression.



Figure 1: Patient presenting blackish discoloration over the dorsum of the tongue

Discussion

Hypomethylating agents (HMAs) such as Azacitidine and Decitabine have been established as first-line therapies for older or medically unfit patients with Acute Myeloid Leukemia (AML). In studies conducted to date, the response rates and overall survival of elderly AML patients treated with HMAs were superior to those who received only supportive care. Likewise, patients receiving HMAs tolerate these agents better than intensive chemotherapy; however, responses to HMAs may take multiple treatment cycles before becoming apparent. Another potential disadvantage of HMA therapy, especially in the elderly, is the risk of treatment-related cytopenias, both of which increase the risk of infection and bleeding. Patients who receive Decitabine are more likely than those who receive Azacitidine to experience grade 3/4 anemia, neutropenia, and leukopenia, highlighting the need for careful hematologic monitoring during the course of treatment. As exemplified by this case, severe degrees of thrombocytopenia may occur during HMA therapy and thus increase the risk of bleeding. The management of such toxicities includes the use of supportive care (eg, transfusions, antimicrobial therapies) and the coordination of multidisciplinary services to optimize the outcome of the patient (Santini & Ossenkoppele et al., 2019; Ma & Ge et al., 2021; Schlager et al., 2017)

Conclusion

This case highlights the complex clinical course of an elderly patient with Acute Myeloid Leukemia undergoing hypomethylating therapy. While Azacitidine and Decitabine offer a less intensive treatment option, they are associated with significant hematological toxicities, including severe pancytopenia, infections, and bleeding complications. The development of intracranial hemorrhage, multidrug-resistant sepsis, and severe thrombocytopenia with suspected drug-related mucosal changes underscores the need for vigilant monitoring, prompt supportive care, and multidisciplinary management to reduce treatment-related morbidity and improve patient outcomes.

Conflict of Interest:

There is no conflict of interest.

References

Courtney D., et al. (2020). Azacitidine and venetoclax in previously untreated acute myeloid leukemia. *New England Journal of Medicine*, 383(7), 617–629. <https://doi.org/10.1056/NEJMoa2012971>

Estcourt, L. J., et al. (2017). Guidelines for the use of platelet transfusions. *British Journal of Haematology*, 176(3), 365–394. <https://doi.org/10.1111/bjh.14423> Stephen

Gregory E. Gurvits. (2014). Black hairy tongue syndrome. *World Journal of Gastroenterology*, 20(31), 10845. <https://doi.org/10.3748/wjg.v20.i31.10845>

Hagop M., et al. (2012). Multicenter, randomized, open-label, phase III trial of decitabine versus patient choice, with physician advice, of either supportive care or low-

dose cytarabine for the treatment of older patients with newly diagnosed acute myeloid leukemia. *Journal of Clinical Oncology*, 30(21), 2670–2677. <https://doi.org/10.1200/JCO.2011.38.9429>

Hartmut Döhner ., et al (2015). Acute myeloid leukemia. *New England Journal of Medicine*, 373(12), 1136–1152. <https://doi.org/10.1056/NEJMra1406184>

Lubbert, M., et al. (2012). A multicenter phase II trial of decitabine as first-line treatment for older patients with acute myeloid leukemia judged unfit for induction chemotherapy. *Haematologica*, 97(3), 393–401. <https://doi.org/10.3324/haematol.2011.048231>

Ma, J., & Ge, Z. (2021). Comparison between decitabine and azacitidine for patients with acute myeloid leukemia and higher-risk myelodysplastic syndrome: A systematic review and network meta-analysis. *Frontiers in Pharmacology*, 12. <https://doi.org/10.3389/fphar.2021.701690>

Santini, V., & Ossenkoppele, G. J. (2019). Hypomethylating agents in the treatment of acute myeloid leukemia: A guide to optimal use. *Critical Reviews in Oncology/Hematology*, 140, 1–7. <https://doi.org/10.1016/j.critrevonc.2019.05.003>

Schlager, E., St. Claire, C., Ashack, K., & Khachemoune, A. (2017). Black hairy tongue: Predisposing factors, diagnosis, and treatment. *American Journal of Clinical Dermatology*, 18(4), 563–569. <https://doi.org/10.1007/s40257-017-0268-y>

T. Sonis. (2004). Oral mucositis in cancer therapy. *Journal of Supportive Oncology*, 2(6 Suppl. 3), 3–8. <http://www.ncbi.nlm.nih.gov/pubmed/15605918>