

## Intro

### What is Acute Myeloid Leukemia?

- Cancer of hematopoietic stem cells
- Can coexist as a spectrum of diseases arising from high-risk myelodysplastic syndromes or develop independently
- Most common type of leukemia in adults
- Average age of diagnosis is 68
- Risk factors: benzene, ionizing radiation, smoking, alkylating agents, Down syndrome

## Case

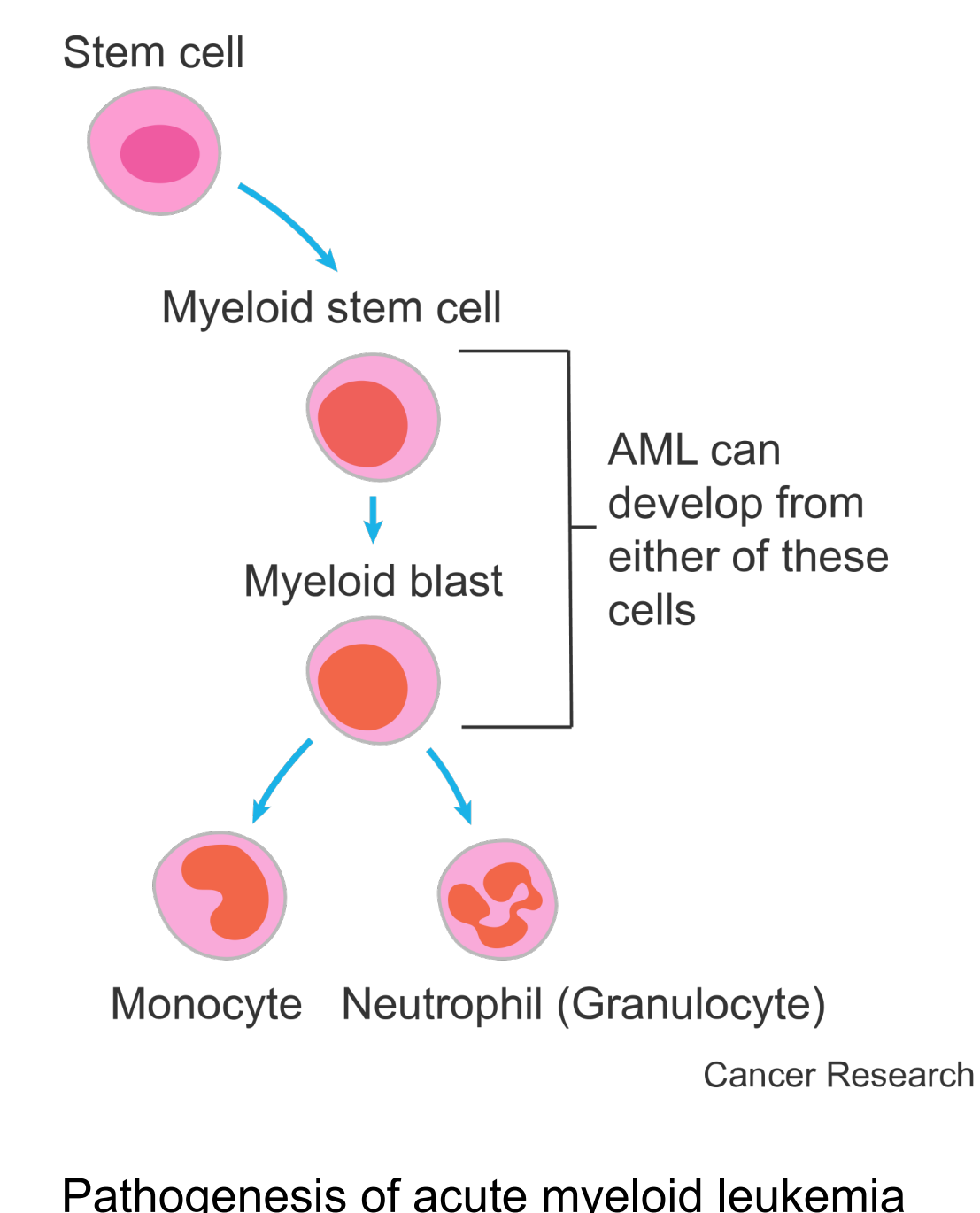
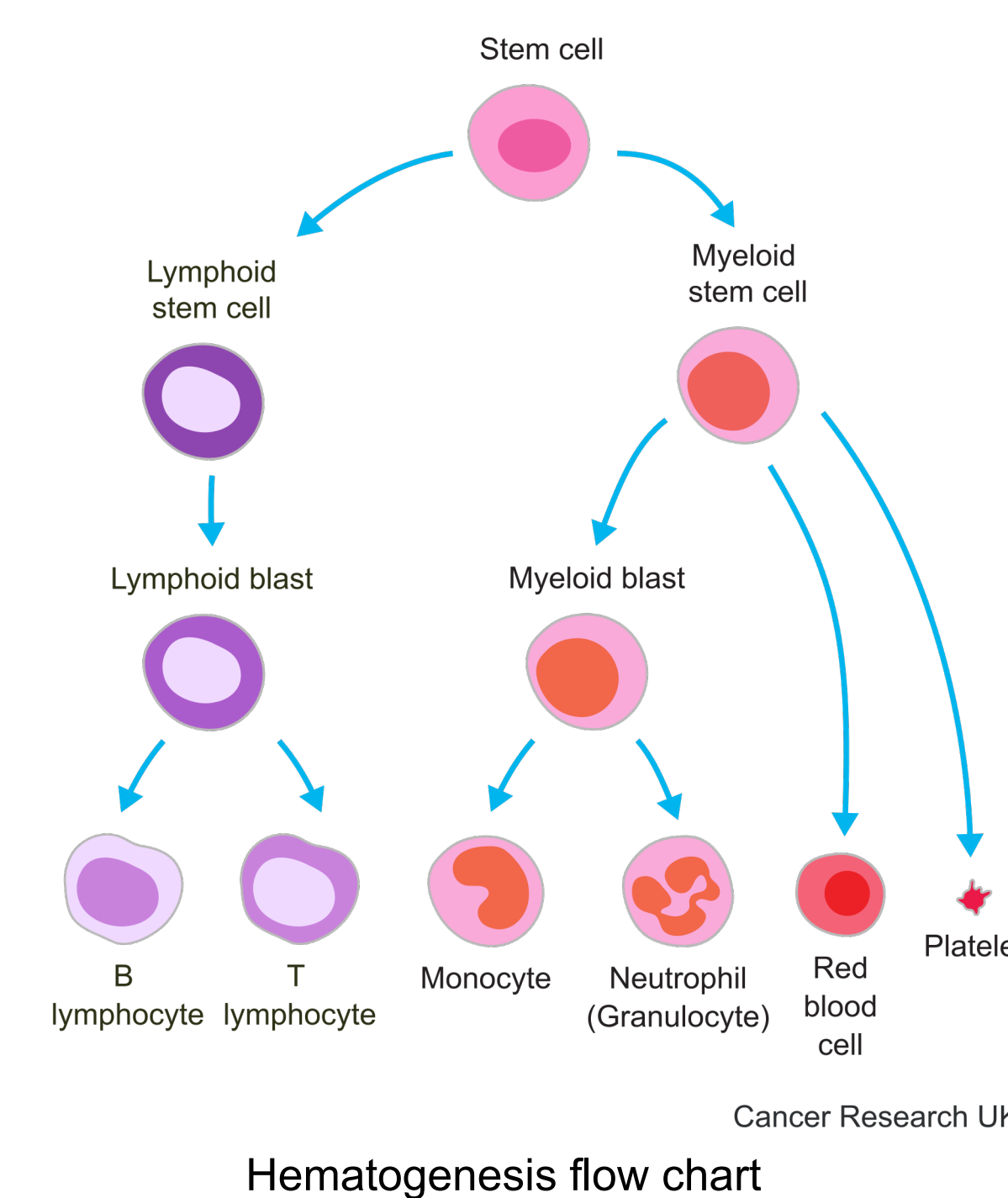
- 68-year-old patient with a past medical history of hypertension, seizure disorder, dementia, and tobacco use disorder
- Presented to the emergency department with a chief complaint of generalized fatigue and increasing shortness of breath
- Patient is an auto mechanic and suffered a traumatic injury three months prior – a vehicle fell off the car jack and pinned him down
- Physical examination demonstrated a lump on his left rib and leg and diffuse bruising all over the patient's body

## Hospital Course

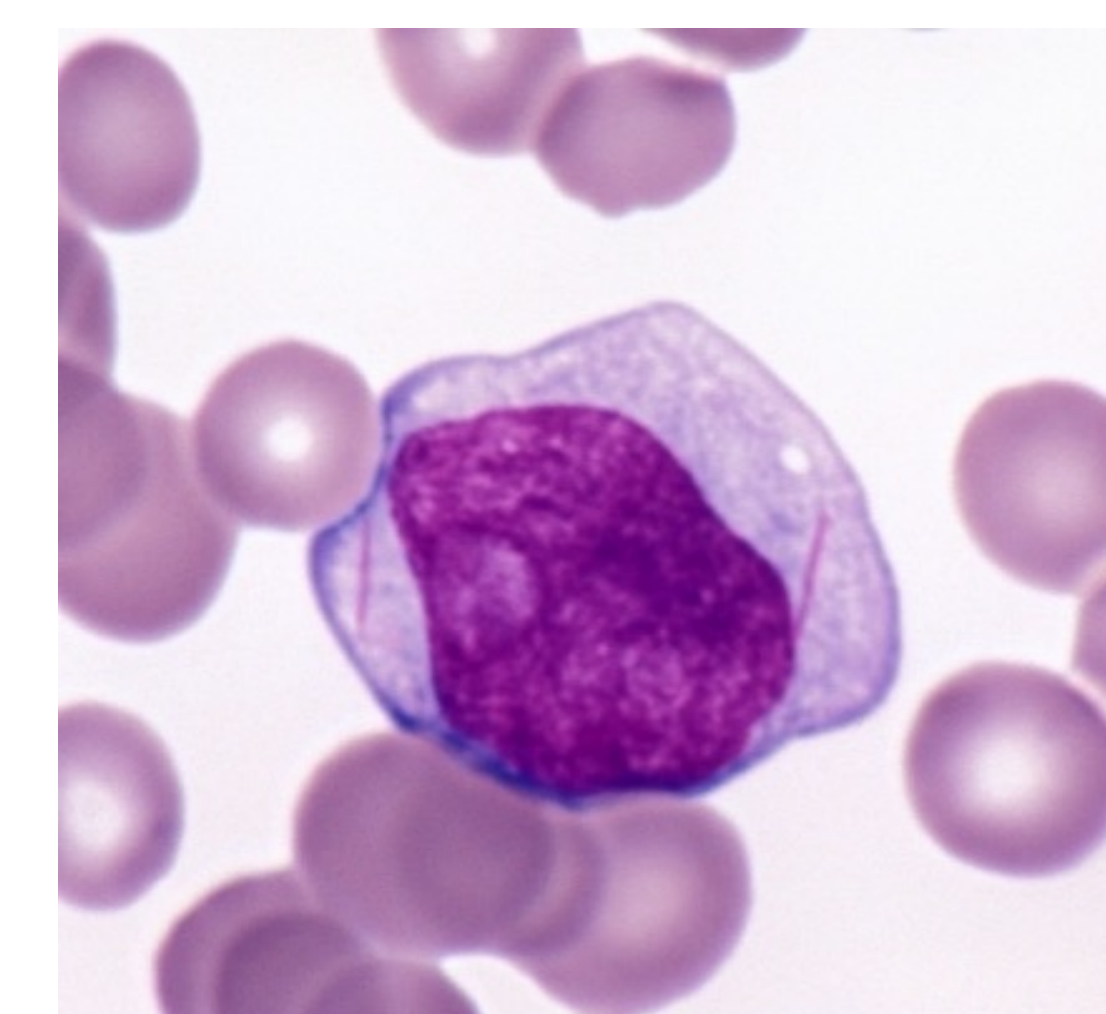
- Emergency department work up included a complete blood count, metabolic panel, and diagnostic imaging
- Lab findings prompted hospital admission for suspicion of hematologic malignancy
- Blood transfusion initiated due to severe pancytopenia
- Urgent hematology/oncology consult for bone marrow aspiration – started on chemotherapeutics following diagnosis

## Labs/Imaging

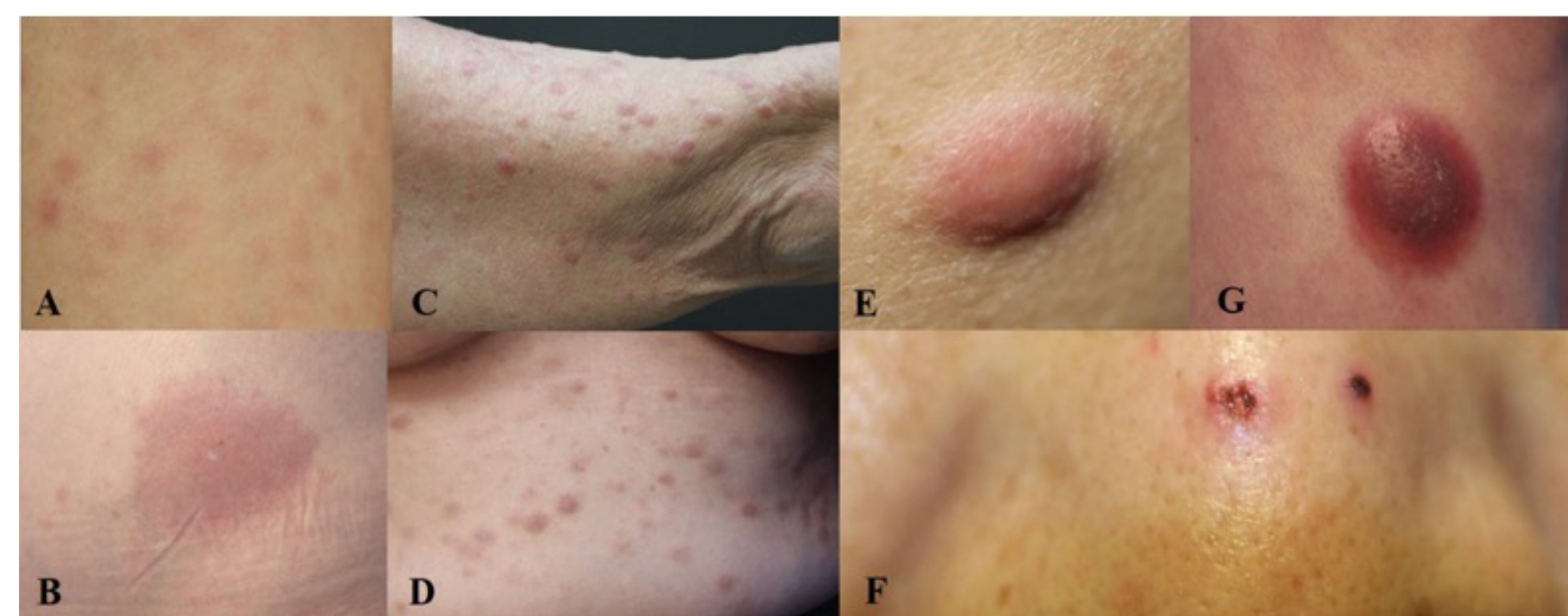
- EKG, chest x-ray, CT angiography of the chest, abdomen, and pelvis demonstrated no acute process
- CBC was significant for anemia, leukocytosis, and severe thrombocytopenia
- No source of infection was found
- Bone marrow aspirate consistent with high-grade myelodysplastic syndrome, with blasts approaching almost 20% – high concern for evolution into acute myeloid leukemia



Typical bone marrow aspirate demonstrating immature myeloid cells



Auer rods – commonly seen in myeloid blast cells of patients with myelogenous leukemias



Common cutaneous findings known as leukemia cutis

## Discussion

- Pathophysiology is related to myeloblast cells proliferating to the point where the bone marrow cannot function, leading to symptoms of pancytopenia
- Often presents with nondescript fatigue or malaise, therefore typically first detected on routine blood work
- Cutaneous findings may also be present
- Confirmatory diagnosis can be made with bone marrow biopsy showing >20% myeloblasts
- Systemic chemotherapy remains a mainstay of treatment
- The patient's exposure to workplace chemicals and history of cigarette smoking could have contributed to the development of their malignancy

## Conclusion

- Case of missed diagnosis and the need to emphasize holistic workup
- Though the patient experienced a traumatic event that could have accounted for his symptoms, he was seen by several facilities without thorough care
- AML has a very poor five-year prognosis – 28.3% survival rate
- Delay in diagnosis could have proved costly to the patient
- However, due to changes in the patient's insurance, follow-up care was interrupted, also reflecting systemic issues within the healthcare framework

## References

- Yale Medicine. (2022, June 6). *Acute Myeloid Leukemia (AML)*. Yale Medicine.
- *What is acute myeloid leukaemia (AML)?*. Cancer Research UK. (2023, September 25). <https://www.cancerresearchuk.org/about-cancer/acute-myeloid-leukaemia-aml/about-acute-myeloid-leukaemia>
- Short, N. J., Rytting, M. E., & Cortes, J. E. (2018). Acute myeloid leukaemia. *Lancet (London, England)*, 392(10147), 593–606. [https://doi.org/10.1016/S0140-6736\(18\)31041-9](https://doi.org/10.1016/S0140-6736(18)31041-9)
- Yook, H. J., Son, J. H., Kim, Y. H., Han, J. H., Lee, J. H., Park, Y. M., Chung, N.-G., Kim, H. J., & Bang, C. H. (2022). Leukaemia cutis: Clinical features and outcomes of 56 patients. *Acta Dermato-Venereologica*, 102. <https://doi.org/10.2340/actadv.v102.1123>
- Shekhar, P. (2022, November 9). *Acute myeloid leukemia*. Optimists. <https://optimists.in/health-hub/acute-myeloid-leukemia/>