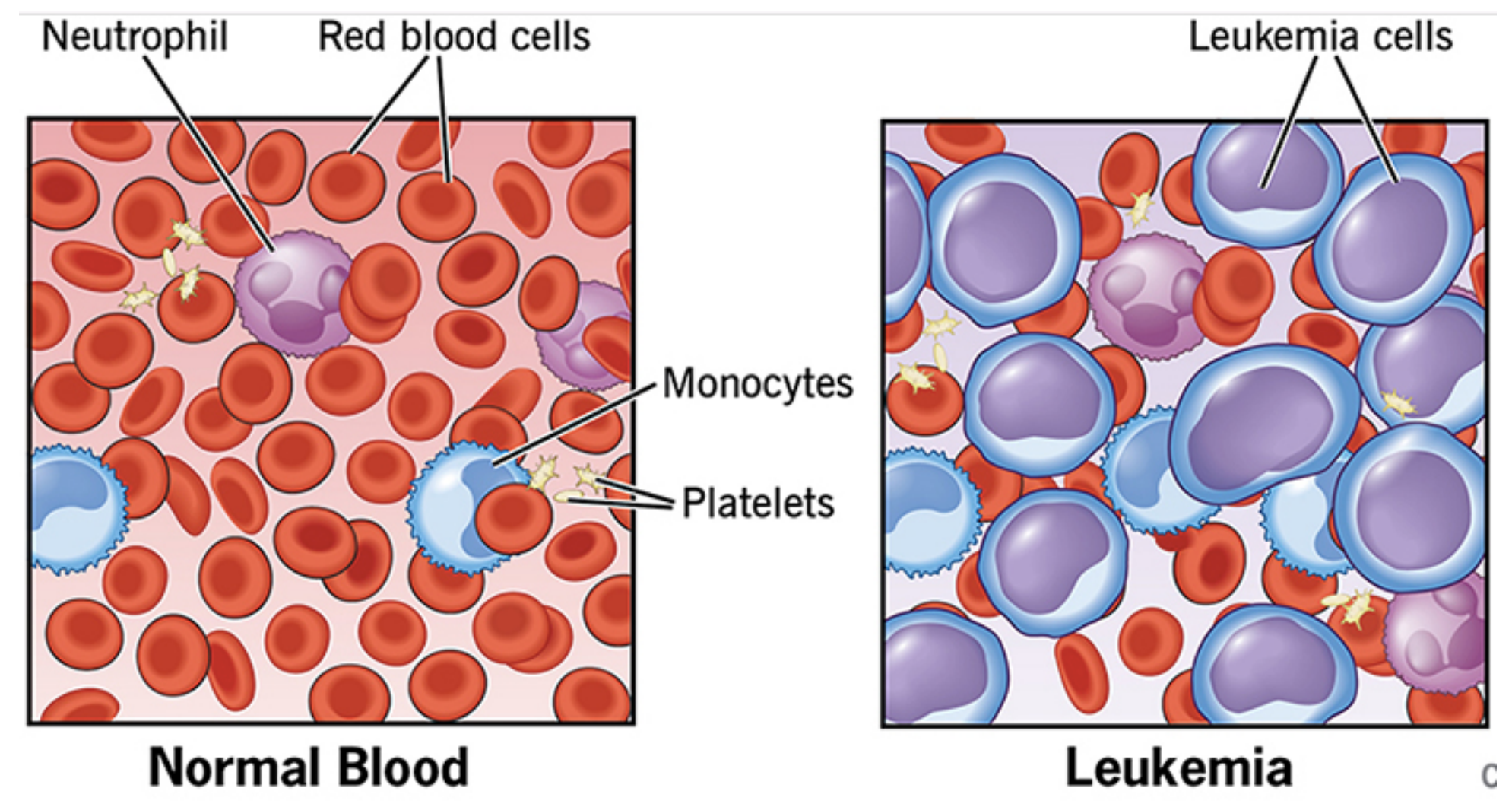


INTRODUCTION/ BACKGROUND

Cancer is a disease caused by an uncontrolled division of cells that damage different cells, tissues, muscles, and bones in the body. Leukemia is a type of cancer which specifically targets the blood and bone marrow producing an abnormal increase of leukocytes, which are a type of white blood cell. It has been proven that there is a correlation between oral health and leukemia. Leukemia often presents firstly in the oral cavity, some symptoms include:

- ❖ xerostomia/ dry mouth
- ❖ gingival bleeding
- ❖ candidiasis
- ❖ hemorrhage
- ❖ osteoradionecrosis
- ❖ dysguesia/taste alteration

This hinders the body's ability to fight infection, which can make individuals immunosuppressed. It reduces secretions in the body and can potentially be lethal..



INFLUENCING FACTORS

Some influencing factors for leukemia are:

- ❖ family history and rare genetic syndromes such as Li-Fraumeni syndrome.
- ❖ smoking cigarettes can weaken the body's immune system making it very difficult to fight the cancer cells.
- ❖ environmental factors such as radiation cause harmful reactions on cells in the body.
- ❖ patients age
- ❖ nutritional status
- ❖ type of malignancy
- ❖ oral care during treatment
- ❖ pretreatment neutrophil counts

CLINICAL SIGNS

Some of the earliest signs of leukemia present in the head and neck region. In 2011, a study in Turkey showed that 42% of the subjects developed oral complications while having leukemia. There is a 20% greater chance of developing caries in patients with leukemia. (Wang & Yan, 2021). Children with Leukemia display more clinical signs than adults. Oral complications in leukemic patients can be divided into primary, secondary and tertiary. Primary complications include infiltration in the oral structures such as gingiva and bone. e.g. leukemic gingival enlargement. Secondary complications include thrombocytopenia, anemia, and granulocytopenia, tendency to bleed, susceptibility to infections, and ulcers. Tertiary complications include ulcerations, mucositis, taste alteration, skin desquamation, candidiasis, gingival bleeding, xerostomia, dysphasia, opportunistic infections, trismus etc. Often times, later tertiary effects can be more severe.

PATIENT CARE

It is the dental professional's responsibility to educate the patient about their individual needs in order to maintain optimal health. Leukemia is usually treated with chemotherapy, irradiation, or bone marrow transplantation. While a patient is undergoing chemotherapy to treat Leukemia, it is important they maintain optimal oral health. This is because they are at a higher risk for oral complications due to their health state. Patients should use a soft bristled toothbrush or a sponge applicator to brush their teeth. Patients should avoid flossing when their platelet count is low because it can cause excess bleeding. Patients should avoid mouthwashes that contain alcohol and spicy foods; that may burn your mouth or cause sores. Two recommendations are Colgate peroxy and ACT dry mouth. Encourage patients to drink plenty of water and avoid caffeine throughout the day, this can also help with xerostomia.



Photo credit: By David J. Kuter, MD, DPhil, Harvard Medical School last full review/revision Jun 2020 | Content last modified Jun 2020.



CONCLUSION

Dental hygienists play a vital role in early detection of systemic diseases such as leukemia, which can manifest in the oral cavity. Dental professionals must understand the effects leukemia can have on the oral cavity and the patient's overall health. It is essential that both dental and medical professionals work in close contact regarding the patient's medical status. As dental hygienists, it is our responsibility to tailor home-care recommendations to help minimize the effects leukemia places on the patient's oral health which directly effects their overall health and disease progression.

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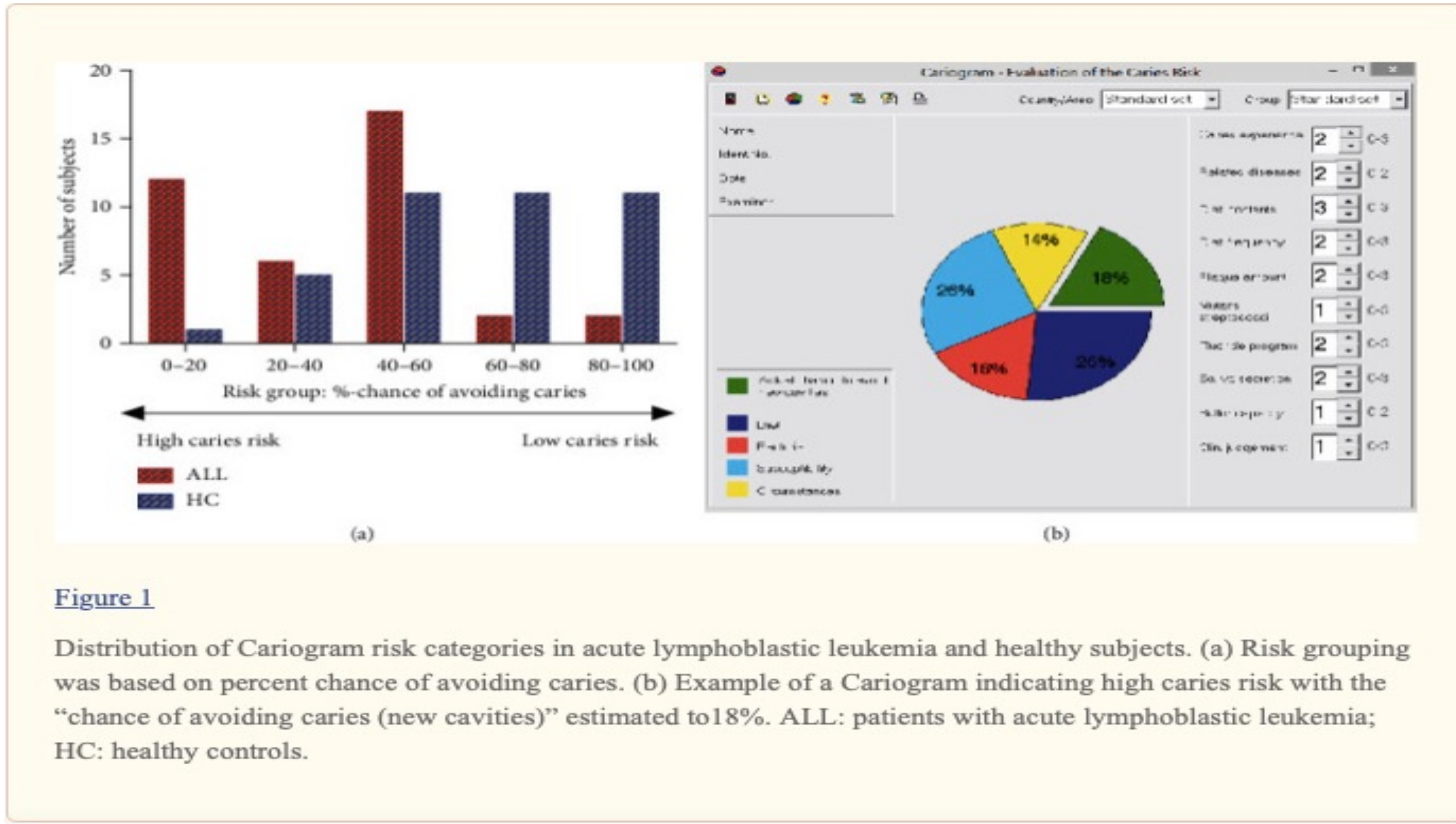


Figure 1
Distribution of Cariogram risk categories in acute lymphoblastic leukemia and healthy subjects. (a) Risk grouping was based on percent chance of avoiding caries. (b) Example of a Cariogram indicating high caries risk with the "chance of avoiding caries (new cavities)" estimated to 18%. ALL: patients with acute lymphoblastic leukemia; HC: healthy controls.

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