WAYS OF PRESENTATION IN ACUTE LYMPHOBLASTIC LEUKEMIA (ALL)
Researchers

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supervisor

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Definition:
• Acute lymphoblastic leukemia (ALL) is a form of leukemia, or cancer of the white blood cells
• Characterized by excess lymphoblast
• Malignant, immature white blood cells continuously multiply and are overproduced in the bone marrow.
• It accounts for 80% of all leukemia cases in children

Etiology:
Unknown predisposing factors are ionizing radiation and congenital predisposition in Down’s (20-fold in childhood), Blooms, Klinefliter, and Faconi syndromes, chemicals pollution, and exposure to radiation.
Panel A shows a photograph of developing cells in healthy marrow. The variation in the appearance of the cells is characteristic of normal marrow. Panel B shows a photograph of marrow cells from a patient with acute lymphoblastic leukemia. An unvaried appearance characterizes the leukemic blast cells.
Symptoms:

• Patients with ALL present with either symptoms relating to direct infiltration of the marrow or other organs by leukemic cells or symptoms related to the decreased production of normal marrow elements.
  • Anemia
  • PUO
  • Fever due to infection
  • Bone pain, joint pain
    • caused by the spread of "blast" cells to the surface of the bone or into the joint from the marrow cavity.
  • Enlarged lymph nodes, liver and/or spleen
  • Petechiae
    • which are tiny red spots or lines in the skin due to low platelet levels
  • Generalized weakness and fatigue
Treatment:

• The earlier acute lymphocytic leukemia is detected, the more effective the treatment. The aim is to induce a lasting remission, defined as the absence of detectable cancer cells in the body (usually less than 5% blast cells in the bone marrow).

• Treatment for acute leukemia can include chemotherapy, steroids, radiation therapy, intensive combined treatments (including bone marrow or stem cell transplants), and growth factors.
1. To find the relationship between gender and age of patients with (ALL)

2. To find out the most initial symptoms of (ALL) that patient suffering from it.
• Design of study: to achieve the present study the researchers adopted a case-series study design to be carried out for the period between the (13th of November till 10th of February 2013)

• Setting of study: the study was carried out in "Ibn Alatheer teaching hospital, in "nuclear medicine hospital" in the "Ibn Sina teaching hospital", also in the recording and controlling center of cancer in Mosul city.
3. Samples of study:

A. Target population: All the patients suffering from ALL in Ibn Alatheer teaching Hospital

B. Samples of study: patients suffering from (ALL) in Ibn Alatheer teaching hospital

4. Tool of study: A Questionnaire provided by our supervisor

Included:
- socio-demographic characteristic (age and gender)
- Symptomatic features (Hematological, non-hematological, asymptomatic and others)

- Method of study: through direct interview with patient himself or his relatives.

6. Data collection period: Data gathered for the study from (the 13th of November till 10th of February 2013)
Table (1): Distribution of symptoms of (ALL) among patients.

<table>
<thead>
<tr>
<th>Top</th>
<th>Symptoms</th>
<th>Number</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anemia</td>
<td>29</td>
<td>51.7%</td>
</tr>
<tr>
<td>2</td>
<td>Fever</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Asymptomatic</td>
<td>5</td>
<td>8.9</td>
</tr>
<tr>
<td>4</td>
<td>Bleeding</td>
<td>3</td>
<td>5.3</td>
</tr>
<tr>
<td>5</td>
<td>lumps</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>6</td>
<td>C.N.S</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>7</td>
<td>G.I.T</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Bone pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>

Table (1) shows the arrangement of the symptoms in top 9 fashion the high percentage (51.7%) appear in anemia while low percentage (0%) appears in GIT, Bone pain and others.
Table (2): indicates the age group and its relationship with gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Male (55.3%)</th>
<th>Female (44.6%)</th>
<th>total (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>0 - 4</td>
<td>13</td>
<td>23.21</td>
<td>7</td>
</tr>
<tr>
<td>9 - 5</td>
<td>8</td>
<td>14.28</td>
<td>10</td>
</tr>
<tr>
<td>10. - 14</td>
<td>10</td>
<td>17.85</td>
<td>8</td>
</tr>
</tbody>
</table>

Table (2) shows that the high percentage appears in (0-4) age male group (23.21%).
Diagram (1): for indication the values of (ALL) symptoms
Diagram (2): illustrates the symptoms of anemia and their incidence.
• Acute lymphoblastic leukemia is predominantly a disease of childhood, but it affects adults as well.

• Bone marrow is responsible for producing (95%) of body`s blood cell WBC, RBC and platelet.

• So when leukemia occurs abnormal WBC blast cell begin to reproduce very rapidly and begin crowding and competing for nutrient and space with other normal cell in the marrow, thus affecting (hemopoiesis) leading to anemia and affect platelet formation leading to thrombocytopenia.
Fever is caused by infection because of neutropenia (abnormally low level of neutrophils) and this fever may or may not improve even with antibiotic.

From this study we noticed that the most common early symptom is anemia (51.7%) secondly was fever (25%) and bleeding is less common.

(ALL) is the most common childhood cancer. The incidence of (ALL) is higher among male than female and this difference is greatest among pubertal children and greater in white people than black.
• The incidence of (ALL) is higher among male than female and this difference is greatest among pubertal children and greater in white people than black.

• this is in agreement with the result of this study which showed that (ALL) with higher incidence among males (55.35%) than female (44.64%) and the most age group affected is (0-4).

• In contrast to the common thought that the early sign of leukemia is bleeding, this study found that only (5.3%) of cases were presented as bleeding (echymosis, petechiae).

• so bleeding was not the commonest or chief complain as compared with anemia or fever.
The explanation for this result is:

- Normal platelet count ranges from (300,000 – 150,000) platelet/microliter and it must be less than (50,000) platelet/microliter to promote bleeding and to level (10,000) platelets/microliter is lethal.

- By observation of test result (blood test) of 8 patient who were initially diagnosed, the platelets count was sufficient to prevent bleeding and those patient don’t experienced bleeding before diagnose.
• Also some of cases in the study (5) where diagnosed accidently.

• Symptoms of CNS involvement (headache, convulsion) and GIT (vomiting) are rarely noticed at initial diagnosing.

• Testicular involvement at diagnose also rare, if present appears as unilateral painless testicular enlargement.
• In some cases we observed that patients had anemia as initial symptom and was accompanied with arthritis or bone pain.

• Bone and/or joint pain is common and results from the marrow being literally "stuffed" with leukemic cells that infiltrate through bone periosteum causing arthritis and bone pain due to marrow cavity enlargement which is crowded with lymphoblast.

• The most common features in anemia was pallor (55.1%) , lethargy (20.6%) .

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Hematological symptoms (as early symptom) is more common than non-hematological.

The main initial symptom was anemia, fever to less extent.

Bleeding isn’t the first common symptom.
Other cases bone pain or arthritis may accompany the early symptom (anemia).

Also from research results we noticed that the common age group which affected with (ALL) it was (0-4) years.
Pay more attention to the signs and symptoms in history taking and physical examination together because the earlier ALL is detected, the more effective the treatment.

The symptoms that mentioned can play a key role in early diagnosing so (ALL) should be one of the probable conditions.
The Earlier ALL Is Detected, The More Effective The Treatment
Before all, greatest thanks to Allah, the most Glorious, who made every things possible.

We would like to express our sincere and deep thanks to our supervisor Dr. Bassam Ismael Jasim for his supervision and support.

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THANK YOU