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# Clinico-Hematologic Profile of Chronic Lymphocytic Leukemia in Egypt: A Three-Center Experience

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## Abstract

*Background:* Chronic lymphocytic leukemia is a malignancy of $CD5^+$ B cells that is characterized by the accumulation of small, mature-appearing neoplastic lymphocytes in the blood, bone marrow and secondary lymphoid tissues, resulting in lymphocytosis, leukemic cell infiltration of the bone marrow, lymphadenopathy and splenomegaly.

*Aim of Study:* Our objective was to analyse clinical, haematological, immunophenotypic and cytogenetic profiles of Chronic Lymhocytic Leukemia (CLL) in Egypt.

*Patients and Methods:* This retrospective study involved one hundred and twenty adult CLL patients diagnosed according to International Workshop on Chronic Lymphocytic Leukemia (IW-CLL) from January 2011 to December 2019. Data were collected and statistically analysed.

*Results:* Chronic lymphocytic leukemia is a disease of elderly and may have an association hepatitis C virus. The study showed that mean of age of CLL patients was 61.03 ( ±9.9), 42 (35%) of patients were positive for hepatitis C antibody.

*Conclusion:* Chronic lymphocytic leukemia is adisease of elderly, there may be an association between hepatitis C virus and development of chronic lymphocytic leukemia.

***Key Words:*** *Chronic lymphocytic leukemia – Clinical profile– Hematological profile.*

## Introduction

**CHRONIC** Lymphocytic Leukemia (CLL) is a malignancy of CD5+ B cells that is characterized by the accumulation of small, mature-appearing neoplastic lymphocytes in the blood, marrow and secondary lymphoid tissues, resulting in lymphocytosis, leukemia cell infiltration of the marrow, lymphadenopathy and splenomegaly **[1,2]**. Chronic Lymphocytic Leukemia (CLL) is characterized by the relentless accumulation in the peripheral blood, bone marrow, and secondary lymphoid organs of clonal B lymphocytes with a distinctive immunophenotype where B-cell markers (CD19, CD23) are expressed along with CD5, with low-level expression of CD20 and surface immunoglobulins **[3,4]**. The aim of this work was to analyse clinical, haematological, immunophenotypic and cytogenetic profiles of CLL.

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## Patients and Methods

This retrospective study was carried out at Menoufia and Tanta and Zagazig Hematology Units including 120 adult patients diagnosed as CLL at these Units from January 2011 to December 2019.

Our study has been approved by Ethical Committee of Faculty of Medicine, Menoufia University and an informed written consent was taken from every patient.

The patient's files were checked for demographic data which include age, sex and residence, clinical finding which include cytopenia, mass and constitutional symptoms. The patient's files were checked also for laboratory data which include complete blood count, blood film, immunophenotyping, bone marrow examination (if done), cytogenetics (if done) and routine investigations which include liver function tests, kidney function tests, fasting blood glucose, 2 hours postprandial blood glucose, Erythrocyte Sedimentation Rate ( ESR), C-Reactive Protein (CRP), hepatitis C virus antibody, hepatitis B surface antigen, lactate dehydrogenase and B2 microglobulin. Staging of patients was done according to modified Rai staging system. Demographic, clinical and laboratory data of the cases were tabulated.

*Statistical analysis:*

Results were tabulated, statistically analysed using Statistical Package for Social Science (SPSS),

version 19.0 (SPSS Inc., Chicago, Illinois, USA) and discussed according to what will be found. Description of quantitative variables was in the form of Mean and Standard Deviation (mean ± SD), description of qualitative variables was by frequency and percentage.

## Results

As regard demographic data of the studied patients, mean age of CLL patients was 61.03 ( ±9.9). Our study show that 71 (59.2%) patients were male and 49 (40.8%) patients were female with M/F ratio about 1.4/1. Our study show that 63 (52.5%) patients were from rural areas with low socioeconomic standard and 57 (47.5%) patients were from urban areas with high socioeconomic standard. Regarding the comorbidities of studied patients. Our study show that 32 (26.7%) diabetic patients, 18 (15%) hypertensive patients, 42 (35%) patients were positive for hepatitis C virus antibody and 7 (5.8%) patients had renal impairment as shown in (Table 1).

Table (1): Demographic data and comorbidities of the studied patients.

| Demographic data & comorbidities | Studied patients No.=120 | |
|---|---|---|
| Age (Y): Mean ± SD | 61.03±9.9 | |
| *Sex: No, %* | | |
| Male | 71 | 59.2 |
| Female | 49 | 40.8 |
| *Residence: No, %* | | |
| Rural | 63 | 52.5 |
| Urban | 57 | 47.5 |
| *Socioeconomic standard: No, %* | | |
| Low | 63 | 52.5 |
| High | 57 | 47.5 |
| *DM: No, %* | | |
| Yes | 32 | 26.7 |
| No | 88 | 73.3 |
| *HTN: No, %* | | |
| Hypertensive | 18 | 15 |
| Normotensive | 102 | 85 |
| *Hepatitis C Ab: No, %* | | |
| Positive | 42 | 35 |
| Negative | 78 | 65 |
| *Renal impairment: No, %* | | |
| Yes | 7 | 5.8 |
| No | 113 | 94.2 |

There is statistical significance (*p*-value 0.008) regarding clinical presentation of anemia where 36.9% of patients <60 years old presented with anemia while 62.2% of patients ≥60 years old presented with anemia, there is statistical significance (*p*-value 0.01) regarding clinical presentation of thrombocytopenia where 23.7% of patients <60 years old presented with thrombocytopenia while 47.6% of patients ≥60 years old presented with thrombocytopenia, there is statistical significance (*p*-value 0.01) regarding clinical presentation of fever where none of patients <60 years old presented with fever while 12.1% of patients ≥60 years old presented with fever, there is statistical significance (*p*-value 0.04) regarding clinical presentation of bleeding where none of patients <60 years old presented with bleeding while 9.8% of patients ≥60 years old presented with bleeding. There is statistical significance (*p*-value 0.006) regarding Del P17 where none of patients <60 years old were positive for Del P17, 52.6% of patients were negative for Del P17 and Del P17 was not done in 47.4% of patients while 10% of patients ≥60 years old were positive for Del P17, 22% of patients were negative for Del P 17 and Del P 17 was not done in 50% of patients. There is no statistical significance regarding gender where 57.8% of patients <60 years old were females while 59.7% of patients ≥60 years old were females, there is no statistical significance regarding coomb test where 94.7% of patients <60 years old presented with negative coomb test while 93.9% of patients ≥60 years old presented with negative coomb test, there is no statistical significance regarding clinical presentation of weight loss where 5.3% of patients <60 years old presented with weight loss while 14.7% of patients ≥60 years old presented with weight loss. There is no statistical significance regarding clinical presentation of splenomegaly where 94.7% of patients <60 years old presented with splenomegaly while 92.7% of patients ≥60 years old presented with splenomegaly as shown in (Table 2).

There is no statistical significance regarding clinical presentation of lymphadenopathy where 94.7% of patients <60 years old presented with lymphadenopathywhile 95.1% of patients ≥60 years old presented with lymphadenopathy. There is no statistical significance regarding CLL score where 86.8% of patients <60 years old were diagnosed by score 5/5 and 13.2% of patients were diagnosed by score 4/5 while 87.8% of patients ≥60 years old were diagnosed by score 5/5 and 12.2% of patients were diagnosed by score 4/5. There is no statistical significance regarding CD5 where 5.3% of patients <60 years old were negative for CD5 while 2.5% of patients ≥60 years old were negative for CD5, there is no statistical significance regarding bone marrow where 52. 6% of patients <60 years old had hypercellular marrow, none of patients had normocellular marrow and bone marrow was not donein 47.4% of patients while 29.3% of patients ≥60 years old had hypercellular marrow

4.9% of patients had normocellular marrow and bone marrow was not done in 65.8% of patients. There is no statistical significance regarding clinical staging where 5.3% of patients <60 years old were classified as low risk according to Rai staging, 50% were intermediate risk and 44.7% were high risk while 4.8% of patients ≥60 years old were low risk, 29.3% were intermediate risk and 65.9% were high risk as shown in (Table 2).

Table (2): Relation of age to clinicolaboratory parameters.

| | Age | | | | $\chi^2$ | *p*-value |
|---|---|---|---|---|---|---|
| | <60y | | ≥60y | | | |
| | No. | % | No. | % | | |
| *Sex:* | | | | | | |
| Male | 22 | 57.8 | 49 | 59.7 | 0.037 | 0.6 |
| Female | 16 | 42.2 | 33 | 40.3 | | |
| *Fever:* | | | | | | |
| No | 38 | 100 | 72 | 87.8 | 5.05 | 0.01 * |
| Yes | 0 | 0 | 10 | 12.1 | | |
| *Weight loss:* | | | | | | |
| No | 36 | 94.7 | 70 | 85.3 | 2.2 | 0.1 |
| Yes | 2 | 5.3 | 12 | 14.7 | | |
| *Bleeding:* | | | | | | |
| No | 38 | 100 | 74 | 90.1 | 3.9 | 0.04 |
| Yes | 0 | 0 | 8 | 9.9 | | |
| *Spleen:* | | | | | | |
| No | 2 | 5.3 | 6 | 7.3 | 0.1 | 0.6 |
| Yes | 36 | 94.7 | 76 | 92.7 | | |
| *Lymphadenopathy:* | | | | | | |
| No | 2 | 5.3 | 4 | 4.9 | 0.008 | 0.9 |
| Yes | 36 | 94.7 | 78 | 95.1 | | |
| *Anemia:* | | | | | | |
| No | 24 | 63.1 | 31 | 37.8 | 6.7 | 0.008* |
| Yes | 14 | 36.9 | 51 | 62.2 | | |
| *Thrombocytopenia:* | | | | | | |
| No | 29 | 76.3 | 43 | 52.4 | 6.1 | 0.01 * |
| Yes | 9 | 23.7 | 39 | 47.6 | | |
| *Coomb test:* | | | | | | |
| Positive | 2 | 5.3 | 5 | 6.1 | 0.033 | 0.5 |
| Negative | 36 | 94.7 | 77 | 93.9 | | |
| *CLL score:* | | | | | | |
| 4 | 5 | 13.2 | 10 | 12.2 | 4.7 | 0.09 |
| 5 | 33 | 86.8 | 72 | 87.8 | | |
| *CD5:* | | | | | | |
| Negative | 2 | 5.3 | 2 | 2.5 | 0.6 | 0.4 |
| Positive | 36 | 94.7 | 80 | 97.5 | | |
| *Del P17:* | | | | | | |
| Negative | 20 | 52.6 | 18 | 22 | 7.4 | 0.006* |
| Positive | 0 | 0 | 8 | 10 | | |
| Not done | 18 | 47.4 | 56 | 50 | | |
| *Bone marrow:* | | | | | | |
| Normocellular | 0 | 0 | 4 | 4.9 | 3.1 | 0.07 |
| Hypercellular | 20 | 52.6 | 24 | 29.3 | | |
| Not done | 18 | 47.4 | 54 | 65.8 | | |
| *Rai staging:* | | | | | | |
| Low risk | 2 | 5.3 | 4 | 4.8 | 5.07 | 0.07 |
| Intermediate risk | 19 | 50 | 24 | 29.3 | | |
| High risk | 17 | 44.7 | 54 | 65.9 | | |

*: Significant.

There is no statistical significance regarding mean age where mean age of male patients were 60.7±9.1 while mean age of female patients were 60.1±11.1, there is no statistical significance regarding clinical presentation of thrombocytopenia where 42.2% of male patients presented with thrombocytopenia while 66.7% of female patients presented with thrombocytopenia, there is no statistical significance regarding clinical presentation of fever where 9.9% of male patients presented with fever while 6.1% of female patients presented with fever, there is no statistical significance regarding clinical presentation of bleeding where 8. 5% of male patients presented with bleeding while 4% of female patients presented with bleeding. There is no statistical significance regarding Del P17 where 4.2% of male patients were positive for Del P17, 26.8% of patients were negative for Del P17 and Del P17 was not done in 69% of patients while 10.2% of female patients were positive for Del P17, 38.8% of patients were negative for Del P17 and Del P17 was not done in 51% of patients. There is no statistical significance regarding clinical presentation of anemia where 49.3% of male patients were presented with anemia while 61.2% of female patients were presented with anemia, there is no statistical significance regarding coomb test where 97.1 % of male patients presented with negative coomb test while 89.8% of female patients presented with negative coomb test as shown in (Table 3).

There is no statistical significance regarding clinical presentation of weight loss where 15.5% of male patients presented with weight loss while 6.1 % of female patients presented with weight loss. There is no statistical significance regarding clinical presentation of splenomegaly where 91.5% of male patients presented with splenomegaly while 96% of female patients presented with splenomegaly, there is no statistical significance regarding clinical presentation of lymphadenopathy where 94.4% of male patients presented with lymphadenopathy while 96% of female patients presented with lymphadenopathy. There is no statistical significance regarding CLL score where 81.7% of male patients were diagnosed by score 5/5 and 18.3% of patients were diagnosed by score 4/5 while 96% of female patients were diagnosed by score 5/5 and 4% of patients were diagnosed by score 4/5. There is no statistical significance regarding CD5 where 2.9% of male patients were negative for CD5 while 4% of female patients were negative for CD5, there is no statistical significance regarding bone marrow where 39.4% of male patients had hypercellular marrow, 5.6% of patients had normocellular marrow and bone marrow was

not done in 55% of patients while 32.7% of female patients had hypercellular marrow, none of patients had normocellular marrow and bone marrow was not done in 67.3% of patients as shown in (Table 3).

There is no statistical significance regarding clinical staging where 5.6% of male patients were classified as low risk according to Rai staging, 39.4% were intermediate risk and 55% were high risk while 4.1 % of female patients were low risk, 30.6% were intermediate risk and 65.3% were high risk as shown in (Table 3).

Table (3): Relation of gender to clinicolaboratory

| | Gender | | | | *t p* test value | |
|---|---|---|---|---|---|---|
| | Male | | Female | | | |
| | Mean | SD | Mean | SD | | |
| Age | 60.7 | ±9.1 | 60.1 | ±11.1 | 0.8 | 0.3 |
| | No. | % | No. | % | $\chi^2$ | |
| *Fever:* | | | | | | |
| No | 64 | 90.1 | 46 | 93.9 | 0.5 | 0.4 |
| Yes | 7 | 9.9 | 3 | 6.1 | | |
| *Weight loss:* | | | | | | |
| No | 60 | 84.5 | 46 | 93.9 | 2.4 | 0.1 |
| Yes | 11 | 15.5 | 3 | 6.1 | | |
| *Bleeding:* | | | | | | |
| No | 65 | 91.5 | 47 | 96 | 0.8 | 0.3 |
| Yes | 6 | 8.5 | 2 | 4 | | |
| *Spleen:* | | | | | | |
| No | 6 | 8.5 | 2 | 4 | 0.8 | 0.3 |
| Yes | 65 | 91.5 | 47 | 96 | | |
| *Lymphadenopathy:* | | | | | | |
| No | 4 | 5.6 | 2 | 4 | 0.1 | 0.7 |
| Yes | 67 | 94.4 | 47 | 96 | | |
| *Anemia:* | | | | | | |
| No | 36 | 50.7 | 19 | 38.8 | 1.6 | 0.1 |
| Yes | 35 | 49.3 | 30 | 61.2 | | |
| *Thrombocytopenia:* | | | | | | |
| No | 41 | 57.8 | 31 | 63.3 | 0.3 | 0.5 |
| Yes | 30 | 42.2 | 18 | 66.7 | | |
| *Coomb test:* | | | | | | |
| Positive | 2 | 97.1 | 5 | 10.2 | 2.8 | 0.09 |
| Negative | 69 | 2.9 | 44 | 89.8 | | |
| *CLL score:* | | | | | | |
| 4 | 13 | 18.3 | 2 | 4 | 5.5 | 0.6 |
| 5 | 58 | 81.7 | 47 | 96 | | |
| *CD5:* | | | | | | |
| Negative | 2 | 2.9 | 2 | 4 | 0.1 | 0.7 |
| Positive | 69 | 97.1 | 47 | 96 | | |
| *Del P17:* | | | | | | |
| Negative | 19 | 26.8 | 19 | 38.8 | 0.4 | 0.5 |
| Positive | 3 | 4.2 | 5 | 10.2 | | |
| Not done | 50 | 69 | 25 | 51 | | |
| *Bone marrow:* | | | | | | |
| Normocellular | 4 | 5.6 | 0 | 0 | 2.1 | 0.1 |
| Hypercellular | 28 | 39.4 | 16 | 32.7 | | |
| Not done | 39 | 55 | 33 | 67.3 | | |
| *Rai staging:* | | | | | | |
| Low risk | 4 | 5.6 | 2 | 4.1 | 1.2 | 0.5 |
| Intermediate risk | 28 | 39.4 | 15 | 30.6 | | |
| High risk | 39 | 55 | 32 | 65.3 | | |

There is statistical significance (*p*-value <0.001) regarding mean age where mean age of patients with low socioeconomic standard were 64.2±8.6 while mean age of patients with high socioeconomic standard were 57.5±10.2, there is statistical significance (*p*-value 0.005) regarding clinical presentation of splenomegaly where 81.3% of patients with low socioeconomic standard presented with splenomegaly while 100% of patients with high socioeconomic standard presented with splenomegaly, there is statistical significance (*p*-value 0.01) regarding clinical presentation of lymphadenopathy where 90.5% of patients with low socioeconomic standard presented with lymphadenopathy while 100% of patients with high socioeconomic standard presented with lymphadenopathy, there is statistical significance (*p*-value 0.05) regarding CLL score where 85.1% of patients with low socioeconomic standard were diagnosed by score 5/5 and 15.9% of patients were diagnosed by score 4/5 while 91.2% of patients with high socioeconomic standard were diagnosed by score 5/5 and 8.8% of patients were diagnosed by score 4/5. There is statistical significance (*p*-value 0.05) regarding CD5 where 6. 3% of patients with low socioeconomic standard were negative for CD5 while none of patients with high socioeconomic standard were negative for CD5, there is statistical significance (*p*-value 0.03) regarding bone marrow where 31.7% of patients with low socioeconomic standard had hypercellular marrow, 6.3% of patients had normocellular marrow and bone marrow was not done in 62% of patients while 42.1 % of patients with high socioeconomic standard had hypercellular marrow, none of patients had normocellular marrow and bone marrow was not done in 57.9% of patients. There is statistical significance (*p*-value 0.05) regarding clinical staging where 9.5% of patients with low socioeconomic standard were classified as low risk according to Rai staging, 33.3% were intermediate risk and 57.2% were high risk while none of patients with high socioeconomic standard were low risk, 38.6% were intermediate risk and 61.4% were high risk as shown in (Table 4).

There is no statistical significance regarding clinical presentation of bleeding where 9.5% of patients with low socioeconomic standard presented with bleeding while 3.6% of patients with high socioeconomic standard presented with bleeding. There is no statistical significance regarding Del P17 where 8% of patients with low socioeconomic standard were positive for Del P17, 28.6% of patients were negative for Del P17 and Del P17 was not done in 63.4% of patients while 5.3% of patients with high socioeconomic standard were

positive for Del P17, 35.1% of patients were negative for Del P17 and Del P17 was not done in 59.6% of patients as shown in (Table 4).

There is no statistical significance regarding-clinical presentation of anemia where 54% of patients with low socioeconomic standard were presented with anemia while 44.4% of patients with high socioeconomic standard were presented with anemia, there is no statistical significance regarding coomb test where 96.8% of patients with low socioeconomic standard presented with negative coomb test while 91.2% of patients with high socioeconomic standard presented with negative coomb test. There is no statistical significance regarding clinical presentation of weight loss where 14.3% of patients with low socioeconomic standard presented with weight loss while 8.8% of patients with high socioeconomic standard presented with weight loss. There is no statistical significance regarding clinical presentation of thrombocytopenia where 42.9% of patients with low socioeconomic standard presented with thrombocytopenia while 36.8% of patients with high socioeconomic standard presented with thrombocytopenia, there is no statistical significance regarding clinical presentation of fever where 11.1 % of patients with low socioeconomic standard presented with fever while 5.3% of patients with high socioeconomic standard-presented with fever as shown in (Table 4).

There is stastical significance ($p$-value <0.001) regarding clinical presentation of thrombocytopenia where 61.9% of patients positive for HCV Ab presented with thrombocytopenia while 28.2% of patients negative for HCV Ab presented with thrombocytopenia, there is stastical significance ($p$-value 0.02) regarding clinical presentation of bleeding where 14.3% of patients positive for HCV Ab presented with bleeding while 2.6% of patients negative for HCV Ab presented with bleeding, there is statistical significance ($p$-value 0.05) regarding coomb test where 11.9% of patients positive for HCV Ab were positive for coomb test while 2. 6% of patients negative for HCV Ab were positive for coomb test, there is stastical significance ($p$-value 0.03) regarding clinical presentation of splenomegaly where 100% of patients positive for HCV Ab presented with splenomegaly while 89.2% of patients negative for HCV Ab presented with splenomegaly. There is no statistical significance regarding clinical presentation of anemia where 59.5% of patients positive for HCV Ab presented with anemia while 51.3% of patients negative for HCV Ab presented with anemia, there is no statistical significance regarding clinical presentation of fever where 7.1 % of patients positive for HCV Ab presented with fever while 9% of patients negative for HCV Ab presented with fever, there is no statistical significance regarding clinical presentation of weight loss where 11.9% of patients positive for HCV Ab presented with weight loss while 11.5% of patients negative for HCV Ab presented with weight loss. There is no statistical significance regarding mean age where mean age of patients positive for HCV Abwere 60.2±10.4 while mean age of patients negative for HCV Ab were 62.01±9.02. There is no statistical significance regarding gender where 52.3% of patients positive for HCV Ab were males while 62.8% of patients negative for HCV Ab were males. There is no statistical significance regarding clinical presentation of lymphadenopathy where 100% of patients positive for HCV Ab presented with lymphadenopathy while 92.4% of patients negative for HCV Ab presented with lymphadenopathy. There is no statistical significance regarding CLL score where 83.3% of patients positive for HCV Abwere diagnosed by score 5/5 and 16.7% with score 4/5 while 89.8% of patients negative for HCV Ab were diagnosed by score 5/5 and 10.2% with score 4/5. There is no statistical significance regarding CD5 where 4.8% of patients positive for HCV Abwere negative for CD5 while 2.5% of patients negative for HCV Ab were negative for CD5 as shown in ( Table 5).

There is no statistical significance regarding Del P17 where 11.9% of patients positive for HCV Ab were positive for Del P17, 28.5% of patients were negative for Del P17 and Del P17 was not done in 59.6% of patients while 3.8% of patients negative for HCV Ab were positive for Del P17, 33.3% of patients were negative for Del P17 and Del P17 was not done in 62.9% of patients. There is no statistical significance regarding bone marrow where 45.2% of patients positive for HCV Ab had hypercellular marrow, none of the patients had normocellular marrow and bone marrow was not done in 54.8% of patients while 32.1 % of patients negative for HCV Ab had hypercellular marrow, 5. 1% of patients had normocellular marrow and bone marrow was not done in 62.8% of patients. There is no statistical significance regarding clinical staging where 0% of patients positive for HCV Ab were classified as low risk, 31% intermediate risk, 69% high risk while 7.7% of patients negative for HCV Ab were classified as low risk, 38.5% intermediate risk, 53.8% high risk as shown in (Table 5).

Table (4): Relation of socioeconomic standard to clinicolaboratory parameters.

| | Socioeconomic standard | | | | *t*-test | *p*-value |
|---|---|---|---|---|---|---|
| | Low | | High | | | |
| | Mean | SD | Mean | SD | | |
| Age | 64.2 | ±8.6 | 57.5 | ±10.2 | 3.8 | <0.001* |
| | No | % | No | % | $\chi^2$ | |
| *Sex:* | | | | | | |
| Male | 37 | 58.7 | 34 | 59.6 | 0.01 | 0.9 |
| Female | 26 | 41.3 | 23 | 40.4 | | |
| *Fever:* | | | | | | |
| No | 56 | 88.9 | 54 | 94.7 | 1.3 | 0.2 |
| Yes | 7 | 11.1 | 3 | 5.3 | | |
| *Weight loss:* | | | | | | |
| No | 54 | 85.7 | 52 | 91.2 | 0.8 | 0.3 |
| Yes | 9 | 14.3 | 5 | 8.8 | | |
| *Bleeding:* | | | | | | |
| No | 57 | 90.5 | 55 | 96.4 | 1.7 | 0.18 |
| Yes | 6 | 9.5 | 2 | 3.6 | | |
| *Spleen:* | | | | | | |
| No | 8 | 12.7 | 0 | 0 | 7.7 | 0.005* |
| Yes | 55 | 81.3 | 57 | 100 | | |
| *Lymphadenopathy:* | | | | | | |
| No | 6 | 9.5 | 0 | 0 | 5.7 | 0.01* |
| Yes | 57 | 90.5 | 57 | 100 | | |
| *Anemia:* | | | | | | |
| No | 29 | 46 | 26 | 45.6 | 0.002 | 0.9 |
| Yes | 34 | 54 | 31 | 44.4 | | |
| *Thrombocytopenia:* | | | | | | |
| No | 36 | 57.1 | 36 | 63.2 | 0.4 | 0.5 |
| Yes | 27 | 42.9 | 21 | 36.8 | | |
| *Coomb test:* | | | | | | |
| Positive | 2 | 3.2 | 5 | 8.8 | 1.7 | 0.1 |
| Negative | 61 | 96.8 | 52 | 91.2 | | |
| *CLL score:* | | | | | | |
| 4 | 10 | 15.9 | 5 | 8.8 | 3.7 | 0.05* |
| 5 | 53 | 85.1 | 52 | 91.2 | | |
| *CD5:* | | | | | | |
| Negative | 4 | 6.3 | 0 | 0 | 3.7 | 0.05* |
| Positive | 59 | 93.7 | 57 | 100 | | |
| *Del P17:* | | | | | | |
| Negative | 18 | 28.6 | 20 | 35.1 | 0.6 | 0.6 |
| Positive | 5 | 8 | 3 | 5.3 | | |
| Not done | 40 | 63.4 | 34 | 59.6 | | |
| *Bone marrow:* | | | | | | |
| Normocellular | 4 | 6.3 | 0 | 0 | 3.4 | 0.03* |
| Hypercellular | 20 | 31.7 | 24 | 42.1 | | |
| Not done | 39 | 62 | 33 | 57.9 | | |
| *Rai staging:* | | | | | | |
| Low risk | 6 | 9.5 | 0 | 0 | 5.7 | 0.05* |
| Intermediate risk | 21 | 33.3 | 22 | 38.6 | | |
| High risk | 36 | 57.2 | 35 | 61.4 | | |

*: Significant.

Table (5): Relation of hepatitis C Ab to clinicolaboratory parameters.

| | Hepatitis C Ab | | | | *t*-test | *p*-value |
|---|---|---|---|---|---|---|
| | Negative | | Positive | | | |
| | Mean | SD | Mean | SD | | |
| Age | 60.2 | ±10.4 | 62.01 | ±9.02 | 0.8 | 0.4 |
| | No | % | No | % | $\chi^2$ | |
| *Sex:* | | | | | | |
| Male | 49 | 62.8 | 22 | 52.3 | 1.2 | 0.3 |
| Female | 29 | 37.2 | 20 | 47.7 | | |
| *Fever:* | | | | | | |
| No | 71 | 91 | 39 | 92.9 | 0.1 | 1 |
| Yes | 7 | 9 | 3 | 7.1 | | |
| *Weight loss:* | | | | | | |
| No | 69 | 88.5 | 37 | 88.1 | 0.004 | 1 |
| Yes | 9 | 11.5 | 5 | 11.9 | | |
| *Bleeding:* | | | | | | |
| No | 76 | 97.4 | 36 | 85.7 | 6.01 | 0.02* |
| Yes | 2 | 2.6 | 6 | 14.3 | | |
| *Spleen:* | | | | | | |
| No | 8 | 10.2 | 0 | 0 | 4.6 | 0.03* |
| Yes | 70 | 89.2 | 42 | 100 | | |
| *Lymphadenopathy:* | | | | | | |
| No | 6 | 7.6 | 0 | 0 | 3.4 | 0.06 |
| Yes | 72 | 92.4 | 42 | 100 | | |
| *Anemia:* | | | | | | |
| No | 38 | 48.7 | 17 | 40.5 | 0.7 | 0.4 |
| Yes | 40 | 51.3 | 25 | 59.5 | | |
| *Thrombocytopenia:* | | | | | | |
| No | 56 | 71.8 | 16 | 38.1 | 12.9 | <0.001* |
| Yes | 22 | 28.2 | 26 | 61.9 | | |
| *Coomb test:* | | | | | | |
| Positive | 2 | 97.4 | 5 | 88.1 | 4.3 | 0.05* |
| Negative | 76 | 2.6 | 37 | 11.9 | | |
| *CLL score:* | | | | | | |
| 4 | 8 | 10.2 | 7 | 16.7 | 3.9 | 0.1 |
| 5 | 70 | 89.8 | 35 | 83.3 | | |
| *CD5:* | | | | | | |
| Negative | 2 | 2.5 | 2 | 4.8 | 3.9 | 0.1 |
| Positive | 76 | 97.5 | 40 | 95.2 | | |
| *Del P17:* | | | | | | |
| Negative | 26 | 33.3 | 12 | 28.5 | 2.7 | 0.1 |
| Positive | 3 | 3.8 | 5 | 11.9 | | |
| Not done | 49 | 62.9 | 25 | 59.6 | | |
| *Bone marrow:* | | | | | | |
| Normocellular | 4 | 5.1 | 0 | 0 | 2.8 | 0.09 |
| Hypercellular | 25 | 32.1 | 19 | 45.2 | | |
| Not done | 49 | 62.8 | 21 | 54.8 | | |
| *Rai staging:* | | | | | | |
| Low risk | 6 | 7.7 | 0 | 0 | 4.7 | 0.09 |
| Intermediate risk | 30 | 38.5 | 13 | 31 | | |
| High risk | 42 | 53.8 | 29 | 69 | | |

*: Significant.

## Discussion

The results of our study are summarized as follows; the mean age of patients with CLL was 61.03y, while according to according to the Mahmood et al., [5] the mean age of patients was 64.18 years, while in Delgado et al., [6] had reported a mean patient age of 68 years. Our study show male predominance with male: female ratio of 1 .4: 1, while according to Rozina et al., [7] there was male predominance with male to female ratio 2.1:1 while according to Mahmood et al., there was male predominance with male to female ratio of 3:1.

Regarding the comorbidities of studied patients, our study show that 32 (26.7%) diabetic patients, 18 (15%) hypertensive patients, 42 (35%) positive for hepatitis C virus antibody and 7 (5.8%) patients had renal impairment.

Our study show that there is statistical significance regarding clinical presentation of anemia where 36.9% of patients <60 years old presented with anemia while 62.2% of patients ≥60 years old presented with anemia, there is statistical significance regarding clinical presentation of thrombocytopenia where 23.7% of patients <60 years old presented with thrombocytopenia while 47.6% of patients ≥60 years old presented with thrombocytopenia, there is statistical significance regarding clinical presentation of fever where none of patients <60 years old presented with fever while 12.1 % of patients ≥60 years old presented with fever, there is statistical significance regarding clinical presentation of bleeding where none of patients <60 years old presented with bleeding while 9.8% of patients ≥60 years old presented with bleeding. There is statistical significance regarding Del P17 where none of patients <60 years old were positive for Del P17, 52.6% of patients were negative for Del P17 and Del P17 was not done in 47.4% of patients while 10% of patients ≥60 years old were positive for Del P1, 22% of patients were negative for Del P17 and Del P17 was not done in 50% of patients.

Our study show that there is statistical significance regarding mean age where mean age of patients with low socioeconomic standard were 64.2±8.6 while mean age of patients with high socioeconomic standard were 57.5±10.2, there is statistical significance regarding clinical presentation of splenomegaly where 81.3% of patients with low socioeconomic standard presented with splenomegaly while 100% of patients with high socioeconomic standard presented with splenomegaly, there is statistical significance regarding clinical presentation of lymphadenopathy where 90.5% of patients with low socioeconomic standard presented with lymphadenopathy while 100% of patients with high socioeconomic standard presented with lymphadenopathy, there is statistical significance regarding CLL score where 85.1% of patients with low socioeconomic standard were diagnosed by score 5/5 and 15.9% of patients were diagnosed by score 4/5 while 91.2% of patients with high socioeconomic standard were diagnosed by score 5/5 and 8.8% of patients were diagnosed by score 4/5. There is statistical significance regarding CD5 where 6.3% of patients with low socioeconomic standard were negative for CD5 while none of patients with high socioeconomic standard were negative for CD5, there is statistical significance regarding bone marrow where 31.7% of patients with low socioeconomic standard had hypercellular marrow, 6.3% of patients had normocellular marrow and bone marrow was not done in 62% of patients while 42.1% of patients with high socioeconomic standard had hypercellular marrow, none of patients had normocellular marrow and bone marrow was not done in 57.9% of patients. There is statistical significance regarding clinical staging where 9.5% of patients with low socioeconomic standard were classified as low risk according to Rai staging, 33.3% were intermediate risk and 57.2% were high risk while none of patients with high socioeconomic standard were low risk, 38.6% were intermediate risk and 61.4% were high risk. Our study show that there is statistical significance regarding clinical presentation of anemia where 36.9% of patients <60 years old presented with anemia while 62.2% of patients ≥60 years old presented with anemia, there is statistical significance regarding clinical presentation of thrombocytopenia where 23.7% of patients <60 years old presented with thrombocytopenia while 47.6% of patients ≥60 years old presented with thrombocytopenia, there is statistical significance regarding clinical presentation of fever where none of patients <60 years old presented with fever while 12.1% of patients ≥60 years old presented with fever, there is statistical significance regarding clinical presentation of bleeding where none of patients <60 years old presented with bleeding while 9.8% of patients ≥60 years old presented with bleeding. There is stastical significance regarding clinical presentation of thrombocytopenia where 61.9% of patients positive for HCV Ab presented with thrombocytopenia while 28.2% of patients negative for HCV Ab presented with thrombocytopenia, there is stastical significance regarding clinical presentation of bleeding where 14.3% of patients positive for HCV Ab presented with bleeding while 2.6%

of patients negative for HCV Ab presented with bleeding, there is statistical significance regarding coomb test where 11.9% of patients positive for HCV Ab were positive for coomb test while 2.6% of patients negative for HCV Ab were positive for coomb test. There is stastical significance regarding clinical presentation of splenomegaly where 100% of patients positive for HCV Ab presented with splenomegaly while 89.2% of patients negative for HCV Ab presented with splenomegaly.

*Conclusion:*

Chronic lymphocytic leukemia is adisease of elderly, there may be an association between hepatitis C virus and development of chronic lymphocytic leukemia, Del 17p must be done in all patients diagnosed as CLL as it is an important investigation to evaluate response of treatment and prognosis.

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*Conflicts of interest:*

There are no conflicts of interest.

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# دراسة لتحليل المظاهر السريرية والدموية والمضادات المناعية والوراثية الخلوية لحالات اللوكميا الليمفاوية المزمنة فى مصر

سرطان الدم الليمفاوى المزمن هو ورم خبيث ينتج من الخلايا الليمفاوية من النوع B التى تتميز بتراكم الخلايا الليمفاوية الصغيرة الناضجة التى تظهر فى الدم والنخاع والآنسجة اللمفاوية الثانوية، مما أدى إلى زيادة عدد الخلايا الليمفاوية، إنتشار الخلايا السرطانية بالنخاع العظمى، وكذلك إعتلال العقد اللمفاوية وتضخم الطحال.

الهدف من البحث: تم تصميم هذه الدراسة لتحليل المظاهر السريرية والدموية والمضادات المناعية والوراثية الخلوية لحالات اللوكيميا المزمنة فى مصر.

وسائل وطرق البحث: ستكون هذه الدراسة دراسة أترابية بأثر رجعى وستنفذ فى وحدات أمراض الدم بالمنوفية وطنطا والزقازيق متضمنه المرضى البالغين الذين يعانون من سرطان الدم الليمفاوى المزمن الذين تم تشخيصهم ومعالجتهم ومتابعتهم فى هذه الوحدات من يناير ٢٠١١ إلى ديسمبر ٢٠١٩.

نتائج البحث: وجد من هذه الدراسة الآتى:

- عمر مرضى اللوكيميا الليمفاوية المزمنة يتراوح من ٣٣–٨٥ ومتوسط عمر المرضى يبلغ ٦١.٠٣.
- المرضى الذكور أكثر من الإناث بنسبة ١:١.٤.
- ٤٧.٥٪ من المرضى يعانون من إنخفاض مستوى المعيشه والحالة الإجتماعية.
- ٢٦.٧ من المرضى يعانون من مرض السكر.
- ١٥٪ من المرضى يعانون من مرض الضغط.
- ٥.٨٪ من المرضى يعانون من قصور بوظائف الكلى.
- ٣٥٪ من المرضى يعانون من الإلتهاب الكبدى الفيروسى من النوع C.
- لم يتم عمل تحليل الطفرة الجينية Del 17P فى ٦٢٪ من المرضى.
- تم عمل فحص النخاع العظمى فى ٤٠٪ من المرضى.