



Clinical and Biological Approach to Peripheral Lymphadenopathy in Adults from a Tertiary Care Centre in Lubumbashi (D. R Congo)

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Abstract

Introduction: Superficial lymphadenopathy is a frequent reason for consultation in Internal Medicine. The diagnosis approach even done by a meticulous clinical examination has to be completed with investigations such as medical imagery and pathologic study. In low-income countries like Democratic Republic of Congo, means for proper diagnosis remain hardly accessible for some classes of the society. Thus, our study aims to describe socio-economic, clinical and biologic parameter that can give diagnosis orientation in patients with superficial lymphadenopathy as observed in the department of internal medicine at the University of Lubumbashi Clinics (DR Congo). **Patients, Material and Method:** This is a descriptive, transversal study on superficial lymphadenopathy observed for a period of 24 months from November 2013 to October 2015 at the University of Lubumbashi Clinics. Parameters studied included gender, age, localization and clinical characteristics of superficial lymphadenopathy; biologic parameters and pathologic diagnosis were determined by lymph nodes biopsy. **Results:** 36 patients data were captured and non-Hodgkin lymphoma is the most frequent pathologic diagnosis (47.20%) followed by reactive hyperplasia (27.80%) and infectious lymphadenitis (19.40%). Some of the variables studied presented a significant statistical association and included age ≥ 50 years old ($p = 0.0247$), inguinal location ($p = 0.0053$), multifocal location ($p = 0.0063$), sensible character ($p = 0.0391$) and leukocytosis ($p = 0.0022$) for non-Hodgkin lymphoma and variables like age below 50 years ($p = 0.0345$), inguinal location ($p = 0.0299$) and sensible character ($p = 0.394$) for reactive hyperplasia. **Conclusion:** The

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most frequent aetiology seen in this very is non-Hodgkin lymphoma (47.2%) followed by lymph node reactive hyperplasia (27.8%) and infectious lymphadenitis. The emergence of non-communicable diseases in both developed countries as low income is growing and special emphasis should be given to this growing scourge. Cancer is one of the most frequent pathologies and non-Hodgkin lymphoma is one of the deadliest cancer types. And having epidemioclinic and biological parameters in the absence of appropriate diagnosis means could contribute to improving the prognosis of lymphadenopathy patients in low-income countries like the Democratic Republic of Congo.

Keywords

Superficial Lymphadenopathy, Approach, Sociodemographic Characteristics, Clinical Characteristics, Biological Parameters

Subject Areas: Epidemiology, Hematology, Oncology

1. Introduction

The generic word for any lymph node pathology is lymphadenopathy. This abnormality can be defined by dimension, consistency and/or number of abnormal lymph nodes [1].

Superficial lymphadenopathy is a frequent reason for consultation in Internal Medicine in both North American countries and Sub Saharan Africa [2] [3]. And in a retrospective study done on lymph nodes biopsy the Benin University Hospital in Benin, Olu-Eddo noticed that 89% of 427 analyzed samples were superficial lymphadenopathy [4].

Causes of superficial lymphadenopathy are multiple and prognosis is usually unknown [5], regardless of location or generalized character. These are symptoms of a variety of pathologies grouped under acronyms depending on authors: “MIAMI” (Malignant, Infectious, Autoimmune, Miscellaneous/unusual, Iatrogenic) [6] for some and “CHICAGO” (Cancer, Hypersensitivity syndromes, Infectious, Connective tissue disorders, Atypical lymphoproliferative disorders, Granulomatous, Others) [7] for others.

The confirmation of the aetiology of lymphadenopathy, from a clinical examination even meticulous, remains as a challenge because its presentation differentiates a little from infectious to non-transmissible lymphadenopathy [8]. Thus, the diagnosis approach should be completed with investigations such as medical imagery (ultrasound, computerized tomography...) and pathology examinations according to Mosheni [7]. Even though these complementary investigations are of great utility confirming the aetiology in case of superficial lymphadenopathy, they remain hardly accessible for patients living in low-income countries like the Democratic Republic of Congo, because health professional has a little knowledge on superficial lymphadenopathy diagnosis method; those precarious means are made available by the health facilities for proper diagnosis; and the cost of the pathological examination is somewhat less affordable for a certain social class of our population.

Thus, the objective of our study is to describe socio-demographic, clinical and biological parameters that can provide diagnosis orientation to superficial lymphadenopathy patients in the department of internal medicine at the University of Lubumbashi Clinics.

2. Material and Method

2.1. Type and Study Period

This is a descriptive and transversal study on patient with superficial lymphadenopathy who had consulted in the department of internal medicine at the University of Lubumbashi Clinics (DR Congo) from 1st November 2013 to 31 October 2015.

2.2. Study Population

We have proceeded by a convenience sampling including all patients with superficial lymphadenopathy seen at

the internal medicine outpatient department or those admitted in the department of internal medicine at the University of Lubumbashi Clinics where 36 patients were listed.

Were admitted, any patients with hypertrophy affecting one or more palpable superficial lymph nodes in the cervical, axillary or inguinal area, measuring more than one centimeter in diameter, irrespective of the gender. We have retained the age above 15 for our series. Were excluded, all patients on TB treatment and/or on anti-mitotic treatment.

The study was done using and analyzing patients medical records including sociodemographic parameters (age, gender), clinical description of lymphadenopathy (localization, consistency, mobility, sensibility), biologic (hemoglobin, red cells, white cells, platelets, HIV serology) and pathologic parameters.

2.3. Biologic and Histopathology Analysis

1) HIV infection diagnosis: HIV serology was determined by a screening rapid test: Determine™ HIV-1/2 (Alere) and positive cases were confirmed by ELISA: Vironostika and Enzygnost done on IMMUNOWASH type WELLWASH 4 MK 2N°SERIE 006-9-7943.

2) Bacteriologic analysis of infectious lymphadenopathy: Secretions culture was done on an ordinary microbial culture medium: Sabouraud and Loweisten.

3) Full Blood Count: Blood analysis was done using hematology automate ABX MICROS 60 N° SERIE 8050S85648.

Values of full blood count were categorized as follow [9]:

1) hemoglobin (Hb):

- <11.8 g/L: values considered as anaemia
- ≥ 11.8 g/L: values considered as normal

2) white cells count (WCC):

- $<3.8 \times 10^3/\text{mm}^3$: values considered as leucopenia
- $3.8 - 11.1 \times 10^3/\text{mm}^3$: values considered normal
- $>11.1 \times 10^3/\text{mm}^3$: values considered leukocytosis

3) red cells count (RCC):

- $<3.8 \times 10^6/\text{mm}^3$: values considered as erythropenia
- $\geq 3.8 \times 10^6/\text{mm}^3$: values considered normal

4) platelets count:

- $<140 \times 10^3/\text{mm}^3$: value considered as thrombocytopenia
- $\geq 140 \times 10^3/\text{mm}^3$: values considered normal

4) Pathology analysis: Tissue sampling was done by excision biopsy where the all lymph node tissue is entirely removed under local anesthesia. Once excised the tissue is fixed in formalin 10% sealed and sent to the pathologist and deposited in plastic cassettes. Tissues contained in plastic cassettes are then dehydrated passed through alcohol (ethanol, isopropanol), alcohol is eliminated by solvents (xylene), and then liquid paraffin at 56°C impregnates the tissue which is then cooled. These steps are automated by inclusive devices. The solid block of paraffin containing the tissue is cut with a microtome, 3 to 5 microns thin slices are then spread on slides. After paraffin dissolution, then rehydration, the tissue is colored. The coloration associate a basic nuclear colorant (hematoxylin) and an acid colorant (eosin). The colored slice is protected with a glued glass or a transparent plastic film and is ready for histological analysis. The reading on the optic microscope brand Leica Microsystems CMS GmbH Ernest-Leitz-straBe 17 - 37 allowed the diagnosis.

5) Ethics considerations: The study was approved by the Ethical Committees of Lubumbashi's University. For Ethics and code of practice reasons and trying to avoid stigma, data were collected in such a manner that patients remained anonymous after obtaining their consent.

2.4. Data Statistics Analysis Technique

Different data collected were coded then captured on a computer and statistical analysis were performed on Microsoft Excel 2010 for encoding of data and Epi Info7® for determining frequencies. Statistical comparisons between diagnoses and socio-demographic, clinical and biological parameters have been made and the Fischer exact test was used for comparison of frequencies with a significant level of $p < 0.05$.

3. Results

In this study, pathologic diagnosis of superficial lymphadenopathy was made on 36 patients and **Table 1** shows socio-demographic, clinical and biological characteristics of these patients compared to the pathologic diagnosis. From this table we can see that non-Hodgkin lymphoma, lymph nodes reactive hyperplasia and infectious lymphadenopathy are pathologic diagnosis most frequently seen in our series with respectively 47.20%, 27.80% and 19.40%; that there is a significant statistical association between non-Hodgkin lymphoma and these variables: age above 50 years old ($p = 0.0247$), inguinal location ($p = 0.0053$), multifocal location ($p = 0.0063$), sensible character ($p = 0.0391$) and leukocytosis ($p = 0.0022$). With regards to reactive hyperplasia, variables like age below 50 years ($p = 0.0345$), inguinal location ($p = 0.0299$) and sensible character ($p = 0.0394$) have presented a significant statistical association.

4. Discussion

During this study, data of 36 patients with superficial lymphadenopathy were captured and 47.2% presented with non-Hodgkin lymphoma as most frequent pathologic diagnosis followed by reactive hyperplasia (27.8%) and infectious lymphadenitis (19.4%). Several studies have been done on the subject but different observations have been made around the world. For some the most frequent aetiology was infectious with TB as main cause

Table 1. Superficial lymphadenopathy patients repartition according to socio-demographic, clinical and biological characteristics compared to the pathologic diagnosis.

Variables	NHL				RH				IL			
	NHL	Others ¹	Total	p	RH	Others ²	Total	p	IL	Others ³	Total	p
	n = 17	n = 19	n = 36		n = 10	n = 26	n = 36		n = 7	n = 29	n = 36	
n(%)	n(%)	N	n(%)	n(%)	N	n(%)	n(%)	N				
Socio-demographics characteristics												
Age \geq 50 years	8(80)	2(20)	10	0.0247	10(38.5)	16(61.5)	26	0.0345	6(23.1)	20(76.9)	26	0.6453
Male gender	13(56.5)	10(43.5)	23	0.177	7(30.4)	16(69.6)	23	0.716	5(38.5)	8(61.5)	13	0.716
Topography												
Cervical	17(53.1)	15(46.9)	32	0.1062	8(25)	24(75)	32	0.1062	5(15.6)	27(84.4)	32	0.1625
Inguinal	11(78.6)	3(21.4)	14	0.0053	1(7.1)	13(92.9)	14	0.0299	1(7.1)	13(92.9)	14	0.2092
Axillary	9(69.2)	4(30.8)	13	0.0819	3(23.1)	10(76.9)	13	0.716	1(7.7)	12(92.3)	13	0.3822
Multifocal location	12(75)	4(25)	16	0.0063	2(12.5)	14(87.5)	16	0.1326	1(6.3)	15(93.8)	16	0.1041
Clinical characteristics												
Sensibility	4(26.7)	11(73.3)	15	0.0391	7(46.7)	8(53.3)	15	0.0394	3(20)	12(80)	15	1
Mobility	16(50)	16(50)	32	0.6051	9(28.1)	23(71.9)	32	1	6(18.8)	26(81.3)	32	1
Hard	11(45.8)	13(54.2)	24	0.906	6(25)	18(75)	24	0.7	5(20.8)	19(79.2)	24	1
Biological parameters												
HIV serology	3(30)	7(70)	10	0.2741	4(40)	6(60)	10	0.4128	2(20)	8(80)	10	1
Anaemia	11(44)	14(56)	25	0.8247	6(24)	19(76)	25	0.4539	6(24)	19(76)	25	0.3999
Neutropenia	1(1)	4(80)	5	0.3419	3(60)	2(40)	5	0.1186	1(20)	4(80)	5	1
Leukocytosis	9(90)	1(10)	10	0.0022	0(0)	10(100)	10	0.0345	0(0)	10(100)	10	0.1546
Thrombopenia	4(57.1)	3(42.9)	7	0.6842	1(14.3)	6(85.7)	7	0.6453	2(28.6)	5(71.4)	7	0.6016
Erythropenia	10(45.5)	12(54.5)	22	0.9393	6(27.3)	16(72.7)	22	1	4(18.2)	18(81.8)	22	1

Others¹: HL, IL, RH, UM; Others²: NHL, HL, IL, UM; Others³: NHL, RH, HL, UM.

[4] [10]-[16] whereas Arun in his study done in South India, believes that the most frequent aetiology was neoplastic lesions 53% in his series and majority of lesions seen were non-Hodgkin lymphoma (32.1% of the entire analyzed sample) [17].

Non-communicable diseases are the leading causes of death globally, killing more people each year than all other causes combined [18]. Contrary to popular opinion, available data demonstrate that nearly 80% of deaths due to non-communicable diseases occur in low- and middle-income countries [19]. And Unwin, in his review, indicates that major non-communicable diseases (cardiovascular disease, cancer, diabetes mellitus, and chronic obstructive pulmonary disease) are causing higher proportions of morbidity and mortality, impacting both in the rural and urban populations of Ethiopia. These findings support evidences from sub-Saharan Africa where non-communicable diseases pose a substantial burden [20]. The prevalence of certain non-communicable diseases, such as cardiovascular disease, diabetes, cancer, and chronic obstructive pulmonary disease, is increasing rapidly, particularly in the urban areas of Sub-Saharan Africa, and that significant demands are being made on the health services by patients with these diseases [20] [21]. This review of literature and results obtained in our series shows sufficiently that these pathologies shouldn't be neglected and an emphasis should be oriented towards malignant hematological pathologies in case of superficial lymphadenopathy such as non-Hodgkin lymphoma particularly. And Bakary, in his study done in Sub-Saharan Africa, showed that non-Hodgkin lymphoma is the 4th most frequent cancer responsible of death after cervix, liver and prostate cancer [21].

In our study some epidemiological and biological factors have shown a significant statistics correlation with non-Hodgkin lymphoma (age equal or above 50 years, inguinal location, multifocal location, painful character and leukocytosis) and lymph nodes reactive hyperplasia (age less than 50 years, inguinal location and painful character) as pathologic diagnosis. Looking at the epidemiological profile where change of life style and diet habits in urban African areas is expected in the future [22] and diagnosis means found in Lubumbashi health structures, we believe that parameters studied above would serve as elements to orientate management of patients with superficial lymphadenopathy in our area and reinforce directives by the National Program against Tuberculosis (NTP) to diagnose TB lymphadenopathy which is currently based on biological and clinical criteria [23].

Befits, nevertheless, be noted that the invasive aspect of excision-biopsy didn't allow an easy patient compliance and the financial and technical accessibility defect was also a difficulty encountered throughout our study.

5. Conclusion

36 patients were listed in our study and the most frequent aetiology in this series is non-Hodgkin lymphoma (47.2%) followed by lymph nodes reactive hyperplasia (27.8%) and infectious lymphadenitis. The emergence of non-communicable disease both in developed and low-income countries is on the rise and an emphasis should be made on this growing scourge. Cancer is one of these frequent pathologies and non-Hodgkin lymphoma is one of the most lethal malignant pathologies. Having epidemic-clinical and biological parameters in the absence of appropriate diagnosis means could contribute to the prognosis of lymphadenopathy patients in low-income countries like the DR Congo.

Author's Contribution

KC, MC conceived and designed the study. KC, KE, KM, KP, KV conducted and collected data. KC, MO, MM, ME, MC contribute to data analysis, interpretation and manuscript review. KC, MM, TB wrote manuscript.

Conflicts of Interests

The authors declare they have no competing interests.

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Abbreviations

DR Congo: Democratic Republic of Congo
HIV: Human Immunodeficiency Virus
ELISA: Enzyme-Linked Immunosorbent Assay
NHL: Non Hodgkin Lymphoma
HL: Hodgkin Lymphoma
IL: Infectious Lymphadenitis
RH: Reactive Hyperplasia
UM: Undifferentiated Malignancy
TB: Tuberculosis



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