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Correlation of Clinico Pathologic Diagnosis of Skin Diseases in a Tertiary Health Centre in South- South Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author UO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AD and OOB managed the analyses of the study. Author AD managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Clinical diagnosis of several skin diseases is mostly supported by skin biopsies, a follow up on the clinicopathological correlation to improve the accuracy in diagnosing skin diseases.
Aims: The aim of this study is to correlate the clinical diagnosis with histopathologic findings, find factors that affect its correlation such as clinical history and differential diagnosis.
Methods: This is a retrospective study of patients seen in the Dermatology Out-Patient Clinic in a Tertiary Hospital in South-South Nigeria, who had skin biopsies done between January 2016 and November 2019.
Data collection was by convenience sampling, and recordings of clinical notes and results of skin biopsies of suitable cases seen at the out-patient clinic between January 2016 and November 2019 were collated. Details of patient's age, gender, folder number, clinical history and diagnosis, histologic report as well as histologic diagnosis were documented. The results were seen as correlating when the provisional clinical diagnosis or any of the differential diagnosis agreed with the histopathologic diagnosis and discordant when the provisional clinical diagnosis or differential diagnosis varied with the histopathologic diagnosis.

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Results: Skin biopsies done on 60 patients was recorded and reviewed. Sixteen (26.7%) were men and 44 (73.3%) women, mean age of patients was 35.5 years ± 16.8. The frequency of cases were papulosquamous diseases 24 cases (40%), tumors 12 (20%), eczematous dermatoses 8 cases (13.3%) infections 2 cases (3.3%), vesiculobullous dermatoses 2 cases (3.3%) and miscellaneous diseases 12 (20.1%). Concerning papulosquamous dermatoses they were made up of 45.8% lichen planus, 41.7% psoriasis, 8.3% pityriasis rubra pilaris and 4.2% lichen nitidus. A few patients 4 (6.6%) had a provisional diagnosis with differential, while 56 (94.4%) had just the clinical diagnosis. There was clinicopathologic correlation in 43 patients (71.7%) and discordance in 17 patients (28.3%). A p value of 0.012 and kappa coefficient of 0.44 was obtained, showing significance.

Conclusion: The overall correlation between clinical and histopathologic diagnosis was good. An accurate description of the lesion with the best probable clinical diagnosis aids the pathologist.

Keywords: Clinicopathologic correlation; skin diseases; clinical history.

1. INTRODUCTION

Skin diseases are the fourth leading cause of disability worldwide, notably the 18th leading cause of global disability-adjusted life years (DALYs) in Global Burden of Disease study in 2013 [1]. In 2014 a study on skin diseases in a tertiary institution in South-South Nigeria revealed that a small number of diseases account for a sizeable diagnosis of dermatoses of which climate and socioeconomic factors are major influencing factors. Noting that dermatoses remain a major cause of morbidity in all age groups and both genders across Nigeria [2]. There are hundreds of skin conditions that affect humans. Several skin conditions present in a similar manner, so a good knowledge of skin diseases, history and physical examination of the lesion is important in reaching the right diagnosis [3,4]. Dermatologist incline more to clinical diagnosis as many skin lesions have typical presentations, intervention prior to hospital consultations may modify many skin diseases and complicate the process of making a diagnosis. To confirm or aid in making the clinical diagnosis, a skin biopsy which constitutes a simple and affordable procedure is often performed for some patients that present to the dermatologist [5,6] as routine for diagnostic confirmation, and not only for cases with diagnostic dilemma.

Clinical details plays a critical role in reaching the histopathological diagnosis. The information written on a pathology request form describing the characteristics, duration, distribution of the skin lesion as well as the site where the biopsy was taken from, with clinical and differential diagnosis aid histopathologic diagnosis. A number of biopsy-related factors can impact on the diagnostic yield of a skin biopsy [7,8]. The study aims to comparess clinical diagnosis with histopathologic diagnosis and find factors that affect their correlation, taking cognizance of history, clinical details and differential diagnosis.

2. MATERIALS AND METHODS

This study was conducted at the Dermatology Out-patient Clinic of the University of Port-Harcourt Teaching Hospital, Rivers state, Nigeria. A tertiary health facility providing services to neighboring states like Bayelsa and Imo State and some parts of Cross-Rivers State. The study was designed to correlate the clinical diagnosis with histopathologic findings, find factors that affect its correlation such as clinical details, assessment and differential diagnosis.

Data collection was by convenience sampling from suitable clinical notes and results of skin biopsies of patients seen at the Out-Patient Clinic between January 2016 and November 2019. Incomplete patient clinical or histopathologic recording was an exclusion criteria, missing data like clinical symptoms and diagnosis rendered them excluded. Details of patient's name, age, gender, folder number, clinical diagnosis, histologic report as well as histopathologic diagnosis were collected and put on an excel sheet. The results were said to correlate when the provisional clinical diagnosis or any of the differential diagnosis matched the histopathologic diagnosis and discordant when the provisional clinical diagnosis or differential diagnosis varied from the histopathologic diagnosis. Data were analysed, using IBM SPSS Statistics version 24.0 (SPSS Chicago Inc., IL and U.S.A.). The results are presented as mean and standard deviation for continuous variables, percentages and tables for categorical variables. A p value < 0.05 was considered statistically significant.

3. RESULTS

Between January 2016 and November 2019, of the 2,268 patients seen in the Dermatologic Out-Patient Clinic, 227 patients had punch skin biopsies of which correlation of histopathologic diagnosis could only be assessed in 60 patients due to incomplete recording. Of the 60 patients, 16 were males (26.7%) and females were 44 (73.3%), with an age range between 7 to 69 years and a mean (SD) of 35.5 years±16.8. Skin biopsies were taken from the lower extremities (39%), upper limbs (26.4%) trunk (18.1%) and head (5.6%) and other sites (10.9%). Most patients had a single clinical diagnosis which matched the histopathologic diagnosis.

The final histopathologic diagnosis was in keeping with the clinical diagnosis in 43 (71.7%) patients and was higher in patients with detailed clinical descriptive information and was discordant in 17 (28.3%) patients and this was noticed with some patients' who had prior interventional treatment and insufficient clinical information. A p- value of 0.012 and kappa coefficient of 0.44 was obtained, showing significance.

4. DISCUSSION

Skin diseases are among the most common of all human health afflictions and affect almost 900 million people in the world at any time [9]. They are a major problem worldwide, varying greatly in symptoms and severity, and impacting negatively on quality of life of the affected subjects [10]. They can be acute, subacute, recurrent or chronic with associated pain occasionally. Some may have predisposing factors and are acquired while others may be genetic. Skin conditions could be mild while others can be life threatening. Several skin conditions present in a similar fashion, while others differ in presentation, bearing in mind that skin lesions could be atypical, with histologic variations. Change in architecture due to modification from rubbing and scratching, and prior intervention with topical agent before presentation can affect histologic diagnosis [11]. Failure to give or recollect predisposing or risk factors associated with these skin lesions increase their complexity. In this light, emphasis should be on an improved communication between the dermatologist and histopathologist [11,12] on detailed history and physical examination of the morphology, distribution, duration of skin lesions. This is important in reaching a diagnosis, as well as a list of differential diagnosis. Several investigations are helpful in reaching a definitive diagnosis of skin diseases, of which a skin biopsy looking at the histological patterns is of essence [13].

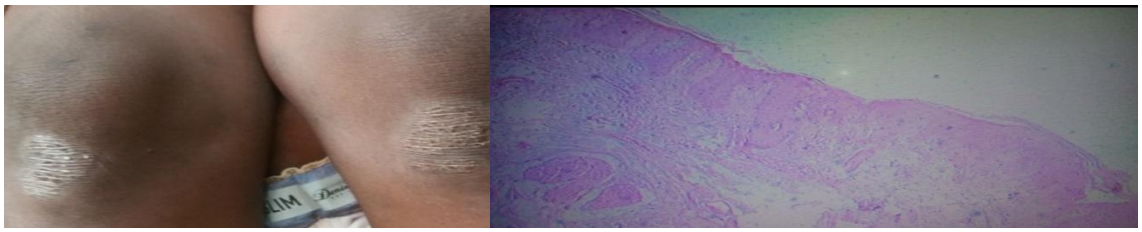

Fig. 1. A 9year old male with the provisional clinical and histopathologic diagnosis as psoriasis

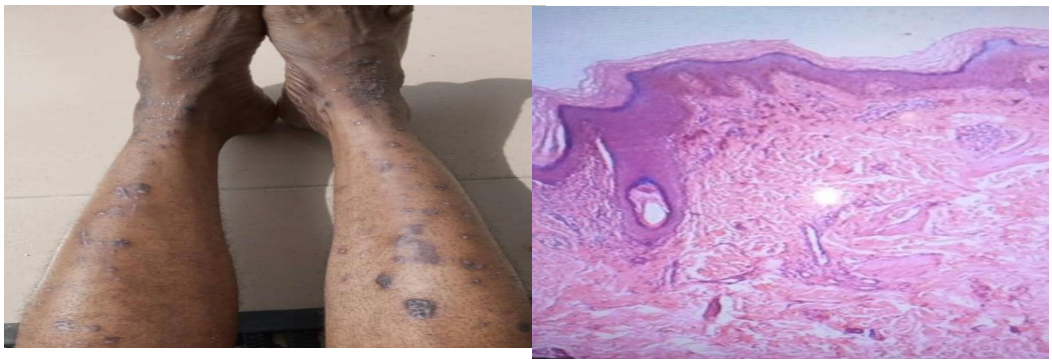

Fig. 2. A 33year old male with the provisional clinical and histopathologic diagnosis as lichen planus

Table 1. Frequency of clinical disease

	Frequency	Percent	Valid percent	Cumulative percent
Allergic contact dermatitis	4	6.7	6.7	6.7
Buruli ulcer	1	1.7	1.7	8.3
Fibroma	1	1.7	1.7	10.0
Fixed drug eruption	1	1.7	1.7	11.7
Granuloma annulare	1	1.7	1.7	13.3
Granulomatous rosace	1	1.7	1.7	15.0
Hansen's disease	1	1.7	1.7	16.7
Kaposi sarcoma	6	10.0	10.0	26.7
Keratoderma	1	1.7	1.7	28.3
Lichen nitidus	1	1.7	1.7	30.0
Lichen planus	11	18.3	18.3	48.3
Non scaring alopecia	3	5.0	5.0	53.3
Onchodermatitis	1	1.7	1.7	55.0
Pemphigus vulgaris	2	3.3	3.3	58.3
Pityriasis rubra pilaris	2	3.3	3.3	61.7
Pompholyx	4	6.7	6.7	68.3
Prurigo nodularis	1	1.7	1.7	70.0
Psoriasis	10	16.7	16.7	86.7
Pyoderma gangrenosum	1	1.7	1.7	88.3
Pyogenic granuloma	1	1.7	1.7	90.0
Seborrheic keratosis	1	1.7	1.7	91.7
Skin tag	1	1.7	1.7	93.3
Wart	4	6.7	6.7	100.0
Total	60	100.0	100.0	

The most common clinicopathologic diseases observed in this study were papulosquamous, tumors and eczematous dermatoses which accounted for 58.3% of cases. Thus, comparable to other studies that examined all types of skin diseases [14]. In this study more cases were seen in females than males, this finding is similar to reports by Babatunde M. Duduyemi et al and Kumar et al who reported majority in females than males, contradicting the findings of Ki and Rotstein who reported a higher incidence among males. The possible reason for this, is that the females are more ready to access health care and are more conscious aesthetically than males who are very busy with their jobs and visit the hospital mostly when in severe pain or during emergencies [15]. The clinico pathologic correlation was 71.7% in this study. This shows some improvement in diagnostic correlation to a similar study by O. O. Sooyele et al in a Nigerian tertiary hospital with a clinico pathologic correlation of 54.6%, where the necessity for incessant individual training, and use of advanced diagnostic techniques were said to be vital to bridging diagnostic gaps with a goal to improve treatment outcomes. was emphasized [16].

However, this finding is generally similar to other studies in different parts of the world, accessing the clinicopathologic diagnostic correlation of skin diseases. As in a retrospective analysis of 5000 histopathologic report of skin diseases in a tertiary hospital in Riyadh, Saudi Arabia with a clinicopathologic concordance of 76% [17].

Additionally, a study on clinicopathological consistency by Dilip Kumar Sa et al, on 371 cases in 2016, showed 67.4% of the cases were consistent, 19.1% were corroborative and 13.5% were inconsistent with clinical diagnosis. Noting that providing a proper history, clinical findings, provisional and differential diagnosis to the pathologist increases diagnostic yield of skin biopsy [18]. A similar study by Canan Aslan et al in 2012, reviewed 3,949 pathological reports retrospectively with a 76.8% consistency in clinic-pathological diagnosis [19] and Mahmut S., Mustafa A. study on the importance of clinical and histopathological correlation in the diagnosis of skin diseases had a compatibility of 71% clinicopathologic diagnosis [20].

Cerroni et al. suggested that diagnostic accuracy could be improved with the addition of photographs of skin lesions with advancement in technology, and good clinical description of the lesion aided the histopathology diagnosis in cases where differential diagnosis were not provided [21].

Table 2. Frequency of clinico pathologic diagnosis

	Frequency	Percent	Valid Percent	Cumulative Percent
Allergic contact dermatitis	3	5.0	5.0	5.0
Chronic non-specific	3	5.0	5.0	10.0
Dermatofibroma	1	1.7	1.7	11.7
Epidermal cyst	1	1.7	1.7	13.3
Fibroma	1	1.7	1.7	15.0
Fixed drug eruption	1	1.7	1.7	16.7
Hansen's disease	1	1.7	1.7	18.3
Kaposi sarcoma	6	10.0	10.0	28.3
Keloid	3	5.0	5.0	33.3
Keratoderma	1	1.7	1.7	35.0
Lichen nitidus	1	1.7	1.7	36.7
Lichen planus	8	13.3	13.3	50.0
Lichen simplex chron	1	1.7	1.7	51.7
Lupus miliaris	1	1.7	1.7	53.3
Neurofibromatosis	1	1.7	1.7	55.0
Non scaring alopecia	3	5.0	5.0	60.0
Non-specific derma	1	1.7	1.7	61.7
Pemphigus foliaceus	1	1.7	1.7	63.3
Pemphigus vulgaris	2	3.3	3.3	66.7
Pityriasis rubra pilaris	2	3.3	3.3	70.0
Pompholyx	3	5.0	5.0	75.0
Psoriasis	7	11.7	11.7	86.7
Pyoderma gangrenosum	1	1.7	1.7	88.3
Pyogenic granuloma	1	1.7	1.7	90.0
Scleroderma	1	1.7	1.7	91.7
Seborrheic keratosis	1	1.7	1.7	93.3
Skin tag	1	1.7	1.7	95.0
Spongiotic dermatitis	1	1.7	1.7	96.7
Wart	2	3.3	3.3	100.0
Total	60	100.0	100.0	

Table 3. Clinico-pathologic discordant cases in the study (17)

Clinical Diagnosis	Histopathologic Diagnosis
Wart	Neurofibromatosis
Psoriasis	Lichen planus
Prurigo nodularis	Dermatofibroma
Buruli ulcer	Kaposi sarcoma
Allergic contact dermatitis	Chronic non-specific dermatitis
Lichen planus	Epidermal cyst
Pompholyx	Chronic non-specific dermatitis
Wart	Keloid
Granulomatous rosacea	Lupus miliaris
Psoriasis	Lichen simplex chronicus
Kaposi sarcoma	Non-specific dermatitis
Granuloma annulare	Keloid
Lichen planus	Spongiotic dermatitis
Onchodermatitis	Keloid
Lichen planus	Chronic non-specific dermatitis
Lichen planus	Scleroderma
Psoriasis	Pemphigus foliaceus

A recent study in (2018) on 455 individuals, pathology reports of skin biopsy specimens of patients with inflammatory skin disease by Seema Umarji et al, reported a correlation of 98%. It was noted that a longer list of differential diagnosis was not helpful to the pathologist and an accurate description of the lesions aids the pathologist [22].

In a more recent study from Iraq (2019), the clinicopathologic consistency of 62% and inconsistency of 38% was reported, noting the importance of discussion between the dermatologist and the histopathologist, and concluding that clinicopathologic correlation is better than either clinical or histopathologic diagnosis alone [23]. This study was conducted to audit the clinical/ histological diagnosis of the dermatology clinic in our centre and find out areas for improvement, as no study had been done before. The outcome of the study showed good correlation between clinical and histologic diagnosis, but showed that there were areas for improvement for even better correlation and subsequently better patient management.

5. CONCLUSION

A correlation of 71.7% clinicopathologic diagnosis with, respect to skin biopsies reported, with initial diagnosis made in clinic prebiopsy compared to the final histopathologic diagnosis. The study supports the previous observations, and demonstrates that providing a few differential diagnosis, detailed history, physical examination in terms of description, distribution, duration of skin lesions and physician-pathologist alliance as well as individual training, with advanced diagnostic techniques enhances the accuracy of the histopathologic diagnosis.

6. LIMITATION

Being a retrospective study, the sample size was small due to loss of data from poor record keeping in hospitals.

7. RECOMMENDATIONS

Continuation of clinicopathologic sessions between dermatologist, histopathologists, frequent refresher courses for dermatologist as well as dermatopathologist to improve their skills and the application of dermoscopy when choosing the site for biopsy will improve the correlation of diagnosis.

The inclusion of complete clinical data such as characteristics of skin lesions, site of biopsy, symptoms of disease and diagnosis including demographics would go a long way in improving clinicopathologic consistency.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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