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AUDIT OF DERMATOPATHOLOGY REQUEST FORMS RECEIVED IN CENTRAL CLINICAL LABORATORY (HISTOPATHOLOGY SECTION) IN A TERTIARY CARE HOSPITAL

Pathology

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ABSTRACT

Background and Objectives In dermatological diagnosis, skin biopsy is important. For its accurate diagnosis by a pathologist, accompanying request forms must have complete details. Incomplete forms received in many cases affect quality of reports, Turn Around Time (TAT) and patient management.This study analyzed dermatopathological request forms received in our laboratory for their completeness and effect on quality of diagnosis. **Materials and Methods** 531 histopathology request forms received from dermatology department from 1stJanuary 2018 to 30thDecember 2019 were evaluated for completeness of details of Patient, Physician, Test request and Specimen. **Results** The study found that only 1.3% forms were completely filled. The rest lacked one or the other details. Patients' complete demographic data was in all forms, clinical images of lesions in only 1.3% forms, provisional diagnoses in 79% forms, name of hospital in 95% and physicians' signatures in 65% forms. More than 70% forms had complete specimen details, but time of collection only in 11% forms. 93% forms contained details of investigation required, while 7% had no such details. **Interpretations and Conclusion** Frequency of submission of incomplete request forms was high resulting in low quality of service delivery by the pathologist. Absence of patients' essential clinical information in request forms hinders the pathologist in accurate and efficient diagnosis and may generate redundancy in the laboratory.

KEYWORDS

Dermatopathology, Errors, Pre-Analytic, Quality, Request Forms

Every child when born, is given a name by his / her parents and this acts as an identification marker, helps in establishing his/ her identity and also aids in arriving at certain other conclusions about his religion, nationality, etc. Similarly a requisition form does the same functions and aids in identification of a sample and providing additional important information to the pathologist. A laboratory test request form acts as the first point of contact between a patient, his / her treating doctor and the histopathologist. It acts as the medium of information between the pathologist and the dermatologist, based on which a pathologist can opine and aid in management of the patient.Ineffective communication and failures in information transfer among health care providers play a significant role in sentinel events and critical medical incidents including laboratoryanalysis and skin pathology.[1]

In dermatological examination, skin biopsy plays a very important role and is an important diagnostic tool. Biopsy specimens are submitted with a corresponding requisition form (RF) that bears relevant clinical information to the pathologist who provides a histopathological interpretation.[2]

A laboratory can be likened to a complex machine where various parts are manned by different people with varying degrees of specializations and areas of expertise, all together with a common goal – to provide affordable, reliable and accurate diagnoses at a fast pace which will help the clinician in the management of the patient. The working of a laboratory can be divided into three phases – pre – analytic, analytic and post – analytic.These three phases determine the quality and reliability of a laboratory. Of these, it is more often than not thought that the analytic phase plays the most important role in setting quality standards of a laboratory and most studies have concentrated on this phase only. But the pre – analytic phase plays an equally important role in arriving at a diagnosis, if not more.

In the histopathology section of the laboratory, the pre – analytic phase consists of the time period between receiving the sample and submission of stained slides for review by the consultant. The biggest drawback for a histopathologist is his inability to examine the patient or take direct history from the patient, as he receives the samples but not a visit by the patient. Thus it is due to such circumstances that the accompanying request form plays an extremely important role in providing a clear picture of the patient, his complaints, the examination findings and treatment protocol followed. The request form acts as the voice of the patient and his treating physician to the pathologist. It can act as a make or break point in clinching the diagnosis for the patient and thereby help in early diagnosis, timely intervention and prompt treatment of the patient.

This study was done to assess the level of completion of the accompanying dermatological request forms and to assess the importance of each field in the RF and its effect on arriving at a reliable and reproducible diagnosis.

MATERIALS AND METHODS

A retrospective study of all histopathology request forms received from dermatology department from 1st January 2018 to 30th December 2019 was conducted. The forms were assessed for their completeness on the basis of the following points :-

1) Patient's details - two sub categories - Demographic Data and Clinical Information.

(a) Demographic data - Full name, Age, Gender, OPD / IPD number or Hospital Identification number.

(b) Detailed Clinical Information –

- Nature and duration of observed symptoms,
- Prior clinical history of similar or any other complaints,
- Lesion morphology using ABCDEI criteria for melanocytic lesions and inflammatory lesions where applicable (A – Asymmetry, B – Borders, C – Colour, D – Diameter of lesion and E – Evolving lesions, I - Itching),
- Site of lesion,
- Other relevant investigations done,
- Clinical and radiological imaging,
- Provisional clinical and differential diagnoses, and
- Subtyping of lesions into any of the four categories –

1) *Melanocytic cases*(including nevus, lentigo and melanoma);
2) *Inflammatory cases* (including psoriasis, folliculitis, inflammation, dermatitis, urticarial, lichen planus, erythema multiforme, dermatitis herpetiformis, granuloma, dermatosis);
3) *Non melanocytic cases* (including cysts, carcinoma, keratosis, adenoma, scar and cicatrix); and
4) *Lymphoproliferative disorders* (including lymphoma, lymphomatoid, mycosis fungoides).

2) Test Request Details - Date of request for test, Investigation required (Histopathological examination, ImmunoFluorescence, etc).

3) Physician's Details – Name, Signature and Stamp of requesting physician, Name of Hospital (samples were received from other hospitals also) and unit number of treating physician.

4) Specimen Details – Date and time of collection of specimen, Biopsy Site, Nature of specimen, i.e., depth of biopsy (2.5 mm, 3mm or 4mm punch biopsy), Specimen received in 10% formalin and whether the amount of formalin was adequate for fixation of biopsy (Formalin : Biopsy :: 2:1), whether specimen was received in correctly labelled containers (name, age, gender, OP/IP number, biopsy site).

5) Any other relevant information – eg – Universal Precaution, need for special stains to be done, etc. All forms were considered complete in this category if they had a mention of the serological status of the patient (negative or positive and accordingly labelled as Universal Precaution).

Only punch biopsies were included in this study. Inadequate clinical information was defined as "a pathologist's need for additional clinical information regardless of the amount of information already present in the RF".

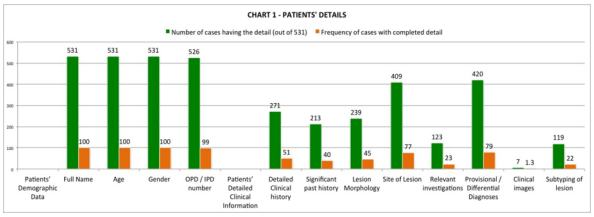
A form was deemed as completely filled when all the above information was provided on the requisition form accompanying the biopsy sample.

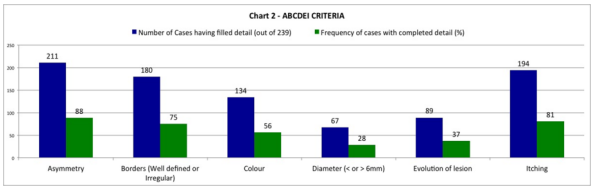
RESULTS

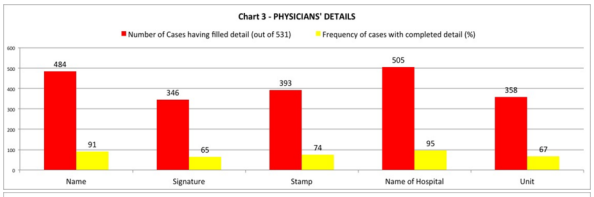
Total 531 histopathology request forms and biopsies were received during the study period and the RF were evaluated for the above-mentioned details. The results are tabulated in tables and charts below.

Out of 531, only 1.3 % forms were completely filled. The other forms had one or the other missing details as shown in the tables below.

From the forms analysed, it was noted that the worst performance was of the category of clinical images which were provided in only 7 / 531 cases which is a Minuscule 1.3% of the total forms received.







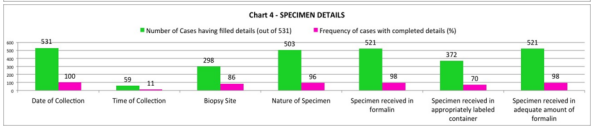


Table I – Rate of completion of test request details

Test Request Details	Number of Cases having filled details (out of 531)	Frequency of cases with completed details (%)
Date of Request	298	86%
Investigation Required	494	93%

Table II – Rate of completion of other relevant information

Other relevant Information	Number of Cases having filled detail (out of 531)	Frequency of cases with completed detail (%)
Universal Precaution	59	11%
Special Stains needed	55	10%

DISCUSSION

Traditionally, laboratory practice is divided into three phases (pre-analytical, analytical and post-analytical).[3]Evidence shows that the majority of laboratory errors (50% – 70%) occur during the pre-analytical phase and involve the handling of the RF.[4]Errors occurring during the analytical phase average less than 10%[5] whereas errors occurring during the post-analytical phase average about 15%.[6] The pre- and post-analytical phases lie outside the control of the laboratory, but contribute approximately 93% of total errors across the entire testing process.[7,8] Laboratory errors are of utmost importance, aslaboratory data influence 70% of medical diagnosis and can significantly impact the cost and outcome of patient treatment [9]

Barriers to effective communication between clinicians and pathologists through the RF include –

1) a lack of appreciation among clinicians of the importance of clinical information for accurate and timely histopathological interpretation,
2) level of dermatologic expertise of submitting clinician,
3) completion of RF by health-care staff other than the clinician,
4) ease of pathologist's access to shared electronic health record (EHR),
5) creation of a bias in the pathologists' mind if provisional diagnosis is given,
6) time constraints in clinical practice,
7) fear of loss of clients in private practice if feedback related to poor clinical information is shared. [10]
8) lack of understanding among clinicians' of the potential, as well as the limitations of histopathology, and
9) being unprepared to undertake collaborative interdisciplinary work. [11]

When present in the RF, critical clinical information is provided in a range of fields. Standardization of the location and structure of these clinical elements may save time and improve accuracy of diagnostic interpretation for dermatopathologists who search for this information within the RF. [2]

An examination of dermatologists' self-reported attitudes and practices related to skin biopsy revealed that a significant proportion (34%) expressed a belief that pathologists should make a diagnosis without clinical information. In addition, clinicians reported not including clinical information in the RF because they felt it would bias the dermatopathologist. [12] In contrast, a self-reported survey of dermatopathologists' perspectives on the quality of clinical information in RFs demonstrated that 80% defined their primary role in dermatopathology broadly as both the provider of a histopathological interpretation and a clinically meaningful report, and over 70% noted that the quality, completeness and clarity of clinical information within the RF has a "large" impact on both histopathological diagnosis and meaningful histopathological interpretation.[1]

Certain dermatological conditions, such as melanocytic lesions and inflammatory dermatoses, may require more detailed clinical information to guide histopathological interpretation[2] and availability of this information helps the pathologist to narrow down on the differential diagnoses and/ or the final diagnosis.

As could be seen in our study, clinical history was provided in only 51% of forms where as 79% forms had differential diagnoses mentioned. This highlights the fact that essential as well as clinically relevant information wasn't provided and that led to additional burden on the pathologist and his resources in providing aclinically reliable and accurate reports.

Biopsy specimens were accompanied by clinical photos of the lesions in only 1.3% of forms which highlights the fact that it is not a standard practice to send photos accompanying the RF and sample. A plausible reason for such a finding could be because of time as well as resource constraints in a country like India, where the patient load is heavy and

doctor : patient ratio is skewed which leads to limitations of available resources in most hospitals. Another reason could be limitations in image storage, archiving as well as privacy concerns for the patients as well as doctors.

Table III – Comparative analysis of our study with other studies

Details to be compared	Our Study (%)	Olson et al (%)[2]	Schettiniet al (%)[11]	Ryan C et al (%)[13]
Full name	100	---	97.2	---
Age	100	100	89.6	100
Gender	100	---	89.5	---
IP/OP Number	99	---	---	---
Clinical History	51	54	28.7	0.8
Clinical Images	1.3	63	---	0.4
Relevant Investigations	23	---	3.09	---
Significant Past history	40	97	---	4.4
D/D	79	82	65.22	78
Lesion Morphology	45	97	---	5.2

Table IV – Comparision of details in our study and Schettini et al's study

Details to be compared	Our Study (%)	Schettini et al (%)[11]
Physicians' Name	91	98
Signature	65	99.5
Stamp	74	---
Name of Hospital	95	97.2
Date of collection	100	98.8
Biopsy Site	86	83.62

In our study, as seen in Table IV, as many as 91% forms had the physicians' name as compared to 98% in study of Schettini et al. Signatures were present in only 65% forms which was extremely discordant with Schettini et al at 99.5%. This discordance could be due to the fact that most junior residents filled up the forms and directly affixed the RF with their stamps and signing themselves rather than taking the physicians' signature, maybe to save time and also thinking that the stamp is equivalent to the sign. Stamps of junior residents' were present on 74% of RF in our study and the name of the hospital was mentioned on 95% of RF in our study.

Our study had higher percentage of forms with date of collection of the biopsy as well as the biopsy site as compared to Schettini et al. This could be because biopsy samples were sent to the histopathology laboratory on the same day of the procedure which reduced chances of forgetting relevant details and also the fact that there are separate fields for entry of these two criteria in the RF.

CONCLUSION

This study concluded that an inadequately filled up request form may be one of the contributory factors for generation of redundancy in the laboratory and for a decrease in the quality of the services rendered. Failure to provide the requested information prevents the pathologist from assessing appropriateness of the investigation and places increased demands upon the laboratory as well as the histopathologists' time[14] and hampers complete clinico-pathological correlation to be achieved. This in turn may inadvertently affect the patient management and outcome down the line.

This study highlighted the need for continuing medical education for the treating clinicians' as well as the supporting health care staff where the importance of each parameter requested in the forms is emphasized upon and its relevance is explained. This may help in alleviation of the above mentioned problems to some extent. Absence of a fully filled RF robs the pathologist of important information and hampers his ability to arrive at a conclusive and accurate dermatopathological interpretation, thereby impacting patient care.

This study also concluded that the pre-analytic phase acts as the make or break phase in reaching to a conclusive, reliable, reproducible and timely (accurate, timely and efficient)[1] diagnosis by the pathologist and may push the pathologist on the backfoot, if not completed correctly.

The quality and quantity of biopsy taken by the surgeon determines the accuracy or otherwise of the report issued.[15] The consequences of inadequate handling of tissues for histopathology have included long TATs, unsatisfactory or inaccurate reports, inability of the pathologist to render a diagnosis and sometimes negative clinical implications for patients.[3, 16] Patients may be subjected to unnecessary treatment with its attendant risk, wastage of resources, repeated biopsies, avoidable mortality and morbidity as well as anxiety among the populace about the health-care delivery system as a whole.[3]

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