



STUDY OF TZANCK SMEAR CYTOLOGY IN SKIN LESIONS

Pathology

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ABSTRACT

Introduction: Tzanck smear preparation is simple, sensitive, rapid and inexpensive procedure that has capacity to reveal the cytomorphological details associated with various skin lesions. Tzanck cytology is reliable in diagnosis of herpes zoster, herpes simplex, varicella and also for diagnosis of Pemphigus vulgaris and molluscum contagiosum. Presence of acantholytic cells or typical Tzanck-like cells in Tzanck smears can suggest a diagnosis of pemphigus group of diseases. Cases of herpes lesions demonstrating the presence of multinucleated giant cells, ballooning degeneration and ground glass nuclei (bland inclusion containing nuclei). **Methods:** The study comprised of 120 patients who underwent Tzanck smear cytology in evaluation of vesiculobullous lesion. Out of 120 cases 55 (45.84%) cases were female patients and 65 (54.16%) were male patients. **Observation:** The commonest cytodagnosis was Pemphigus vulgaris followed by Bullous pemphigoid and Herpes infections. 7 cases were reported as inflammatory bullous lesion as they lack evidence of viral infection and also lack the presence of acantholytic cells. Herpes zoster (4.16%) and Herpes simplex (10%) were the most common within the viral infections group. In which lesions included were Herpes labialis, Herpes genitalis, Neonatal varicella, Herpes associated erythema multiforme and Disseminated herpes. In study other lesions were Dermatitis herpetiformis, Paraneoplastic pemphigus, Molluscum contagiosum, Fungal infections and SCC. Out of 120 cases, 51 cases were biopsied and therefore available for diagnosis. 48 cases correlated with histopathological diagnosis. **Conclusion:** Based on observations made in present study it can be concluded that Tzanck smear is safe, painless, inexpensive and rapid diagnostic test that can be used as first line diagnostic tool in various vesiculobullous-ulcerative mucocutaneous lesion.

KEYWORDS

vesiculobullous lesions, Tzanck smear, Acantholytic cell

INTRODUCTION:

Tzanck smear is a cytodagnostic procedure, first introduced in 1947 by Tzanck, a French physician in herpetic infections and pemphigus.^[1] Tzanck smear preparation is simple, sensitive, rapid and inexpensive procedure that has capacity to reveal the cytomorphological details associated with various skin lesions. Tzanck cytology is reliable in diagnosis of various vesiculobullous disease or ulcerative lesion like herpes zoster, herpes simplex, varicella and also for diagnosis of Pemphigus vulgaris and molluscum contagiosum.^[2] It provides a helpful aid for corroboration or exclusion of a clinically suspected diagnosis. A positive Tzanck smear result can lead to rapid confirmation of the diagnosis of herpetic infection, even when viral culture fails. Presence of acantholytic cells or typical Tzanck-like cells in Tzanck smears can suggest a diagnosis of pemphigus group of diseases.^[3] Clinical information accompanied by cytodagnosis is useful in the examination of numerous skin lesions in developing countries.

AIM:

To determine the diagnostic value of Tzanck smear in erosive, vesicular, bullous and pustular skin lesions correlate the findings histologically.

MATERIAL AND METHODS:

This retrospective study includes tzanck smears received at cytology section of Pathology department, B. J. Medical College Ahmedabad from May 2022 to August 2023. The clinical information of the cases recorded from CRF (Clinical Requisition Form) and electronic database of our department. A total 120 patients with vesiculobullous and ulcerative lesions attending skin and venereal disease OPD were included.

Inclusion Criteria:

Patients who were clinically suspected to have vesiculobullous or ulcerative lesions due to Herpes simplex, varicella zoster, Pemphigus vulgaris, bullous pemphigoid, insect bite, molluscum contagiosum and other vesiculobullous disease.

Exclusion Criteria:

Patients in remission, on medication and with relapse of vesiculobullous lesions.

Preparation Of Tzanck Smear:

An intact vesicle of bulla was chosen for the smear preparation. The lesion is de-roofed and the base scrapped with the blunt edge of a scalpel blade. The material is transferred to a glass slide and gently smeared over it. Then it is air dried. Air dried fixed smear underwent MGG staining and fixed smear in methanol underwent H&E staining. The smear was finally examined under light microscope for cytological findings.^{[2][5]}

OBSERVATION:

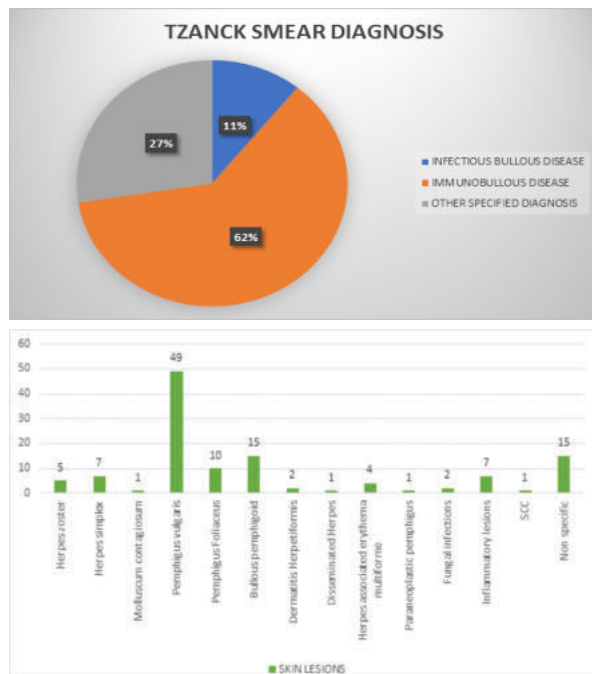
The study comprised of 120 patients who underwent Tzanck smear cytology in evaluation of vesiculobullous lesion. Out of 120 cases 55 (45.84%) cases were female patients and 65 (54.16%) were male patients. Youngest patient was 12 days old and oldest being 85yrs old. Maximum number of patients was in age group 30-40 yrs.

Table 1: Distribution of Cytodiagnosis and lesion type:

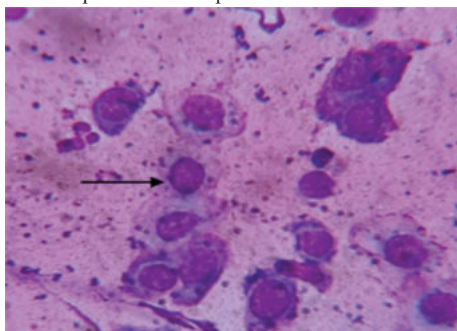
TYPE OF DISEASE	CYTOLOGICAL DIAGNOSIS	TOTAL
INFECTIOUS BULLOUS DISEASE	Herpes zoster	5
	Herpes simplex	7
	Molluscum contagiosum	1
IMMUNO BULLOUS DISEASE	Pemphigus vulgaris	49
	Pemphigus foliaceus	10
	Bullous pemphigoid	15
OTHER SPECIFIED DIAGNOSIS	Dermatitis Herpetiformis	2
	Disseminated herpes	1
	Herpes associated erythema multiforme	4
	Paraneoplastic pemphigus	1
	Fungal infection	2
	Inflammatory lesions	7
	Squamous cell carcinoma	1
	Non specific	15
TOTAL		N=120

The commonest cytodagnosis was Pemphigus vulgaris followed by Bullous pemphigoid and Herpes infections. 7 cases were reported as inflammatory bullous lesion as they lack evidence of viral infection and also lack the presence of acantholytic cells. Herpes zoster (4.16%) and Herpes simplex (10%) were the most common within the viral

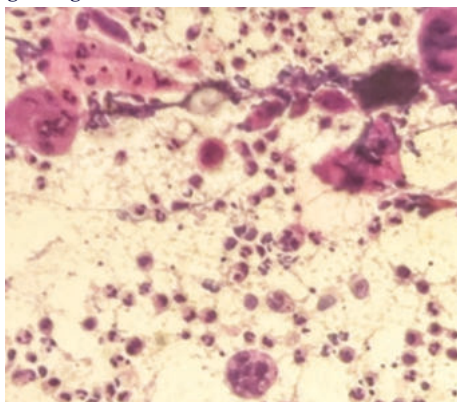
infections group. In which lesions included were Herpes labialis, Herpes genitalis, Neonatal varicella, Herpes associated erythema multiforme and Disseminated herpes. Cases of herpes lesions demonstrating the presence of multinucleated giant cells, ballooning degeneration and ground glass nuclei (bland inclusion containing nuclei). Cases of Dermatitis herpetiformis showed many acantholytic cells with bi and multinucleated forms and intranuclear inclusions are seen.



All cases of pemphigus group showed acantholytic cells. These cells are also known as Tzanck cells; which are large, round keratinocytes having a hyperchromatic nucleus, hazy or absent nucleolus, perinuclear halo, and moderate to abundant basophilic cytoplasm. All cases of bullous pemphigoid had inflammatory cells as well as a high number of eosinophils and neutrophils.



Tzanck smears displaying typical acantholytic cells in case of Pemphigus vulgaris



Tzanck smears showing multinucleate giant cells in case of Herpes genitalis

51 cases were biopsied and therefore available for diagnosis and the result is shown in Table 2:

Table 2: Cyto-histology diagnosis correlation:

Tzanck smear cytology diagnosis	No. of cases available for biopsy	Histological diagnosis	Discordant	% Correlation
Herpes genitalis (7 cases)	5	Herpes genitalis	1	80%
Pemphigus vulgaris (49 cases)	28	Pemphigus vulgaris	2	92.85%
Pemphigus foliaceus (10 cases)	6	Pemphigus foliaceus	0	100%
Bullous pemphigoid (15 cases)	9	Bullous pemphigoid	0	100%
SCC (1 case)	1	SCC	0	100%
Herpes associated erythema multiforme (4 cases)	2	Herpes associated erythema multiforme	0	100%

There were 07 cases cytodisposed as Herpes genitalis out of which 05 underwent skin biopsy. The biopsy diagnosis in 04 cases were Herpes genitalis diagnosis (80%). Out of 49 cases cytodisposed as Pemphigus vulgaris 28 underwent biopsy and 26 were diagnosed as Pemphigus vulgaris (92.85%) on biopsy. There were 09 cases of bullous pemphigoid who underwent biopsy and all 09 cases confirmed the cytodisposition (100%). Out of the 10 cases of Pemphigus foliaceus 06 has undergone skin biopsy. The histological diagnosis in all case were concurrent with cytodisposition (100%). There was 01 case of SCC who underwent biopsy and histological diagnosis confirmed the cytodisposition (100%). 02 cases of herpes associated erythema multiforme which has undergone skin biopsy. The histological diagnosis in all case were concurrent with cytodisposition (100%). Thus, emphasizing the role of Tzanck smears as a rapid diagnostic tool for vesiculobullous disorders.

DISCUSSION:

This study comprised of 120 patients who underwent Tzanck smear cytology in evaluation of vesiculobullous lesion. Out of 120 cases 55 (45.84%) cases were female patients and 65 (54.16%) were male patients. Maximum number of patients was in age group 30–40yrs which correlates with study of Wu, Schapiro & Harist 2005^[6] which states that the autoimmune bullous lesions are common in adults.

Suitability of Tzanck smear preparation in vesiculobullous lesion primarily for diagnosis of Herpes virus, Pemphigus vulgaris, bullous pemphigoid and molluscum contagiosum has been observed by many author.^{[7][8]} Clinical identification of herpes simplex is generally so straightforward that laboratory tests are not usually required. But Tzanck smear is a reliable tool in identifying Herpes simplex in ruling out other mimickers like herpetic gingivostomatitis, Kaposi varicelliform eruption. Typical herpetic changes include multinucleation and crowding of the nuclei, nuclear moulding, peripheral margination of the nuclear chromatin, and ground glass appearance of the nuclei. Intranuclear inclusions with a prominent halo, ballooning degeneration and inflammatory cells can also be seen. In our study, the findings of multinucleation and acantholytic cells were seen in cases of clinically suspected herpetic infections.

Tzanck smear test is particularly helpful in providing a provisional diagnosis of Pemphigus vulgaris when the site of the lesion is not amenable for biopsy or the disease is in a very early stage. Typical acantholytic cells are usually observed on Tzanck smear in cases of Pemphigus vulgaris, while other bullous lesions show scarcity of keratinocytes, absence of acantholytic cells, and relative predominance of inflammatory cells. Eosinophils are seen in abundance in cases of bullous pemphigoid.^[10] Similar cytological features of pemphigus vulgaris and bullous pemphigoid were also noted in our study. Out of 15 cases cytodisposed as Bullous pemphigoid 09 cases underwent skin biopsy, all of which confirmed the cytodisposition. Such correlation was also seen by Verma et al 1993^[9]

in which 03 cases of bullous pemphigoid was studied.

The limitations of Tzanck smear are that representative material may not be obtained if slides are improperly prepared from a crusted vesicle. This can also result if the base of the lesion is not adequately scraped. Poorly preserved cells can sometimes resemble neoplastic cells, leading to a wrong impression.

The main advantage is that Tzanck smear is an inexpensive, simple, and rapid test and does not require any specialized laboratory equipment. In our study, the findings of the Tzanck smear correlated with the histological diagnosis in majority of the cases (48/51), and also corroborated well with the clinical verdict, proving it to be a valuable adjunct in a variety of dermatoses, especially vesiculo bullous and herpetic lesions.

CONCLUSION:

Based on observations made in present study it can be concluded that Tzanck smear is safe, painless, inexpensive and rapid diagnostic test that can be used as first line diagnostic tool in various vesicobullous-ulcerative mucocutaneous lesion.

Tzanck smear cytology by showing parallel cytomorphological characters with skin biopsy can reduce the need of the skin biopsy in most of the vesicobullous skin lesions. Tzanck smear acts as a rapid aid to establish a precise clinical diagnosis in vesicobullous skin lesions and has its own significance in cytodiagnosis. In addition, taking a Tzanck smear causes minimal trauma or discomfort to the patient allowing it to be easily performed.

Although not a substitute for standard histology, with consistent and careful practice, Tzanck smear can aid in establishing the clinical diagnosis with ease and rapidity and can serve as an adjunct to the gold standard techniques in diagnosing vesiculo bullous skin lesions.

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