The study of vesicobullous skin lesions by Tzanck smear cytology

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Abstract
Vesicobullous lesion of skin and mucosa is commonly seen in clinical practice of dermatology. Tzanck smear preparation is simple sensitive, rapid and inexpensive procedure that has capacity to reveal the cytomorphological details associated with various such lesions. This study was conducted to assess Tzanck smear cytology for cytomorphological features and diagnosis in various vesicobullous lesion and correlate the findings with subsequent skin biopsy. The study comprised of 104 patients who underwent Tzanck smear cytology in evaluation of vesicobullous lesion. Tzanck smear preparation of two cases was suboptimal for cellularity and therefore not included in the study. The commonest cytodiagosis was Herpes zoster followed by Pemphigus vulgaris and bullous pemphigoid. 18 cases were reported as inflammatory bullous lesion as they lack evidence of viral infection and also lack the presence of acantholytic cells. Out of 102 cases, 30 cases were biopsied and therefore available for diagnosis. 29 cases correlated with histopathological diagnosis. In the group of 18 cases of non-specific inflammatory bullous lesion a single case underwent biopsy in which a histodiagnosis rendered was bullous pemphigoid. The observation in this group suggested for diligent microscopy, nonrepresentation of cells and possible under interpretation of the lesion. 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 vessicobullous-ulcerative mucocutaneous lesion.

Keywords: Vesicobullous lesions, Tzancks smear.

Introduction
Vesicobullous lesion of skin and mucosa is commonly seen in clinical practice of dermatology. Tzanck smear preparation is simple sensitive, rapid and inexpensive procedure that has capacity to reveal the cytomorphological details associated with various such lesions. First known application of exfoliated cytology in cutaneous vesicobullous lesion was reported by Tzancks in 1947[1] and thus came to the existence the word of Tzanck preparation cytology. Tzanck cytology is reliable in diagnosis of herpes zoster, herpes simplex and varicella[2,3] and also for diagnosis of Pemphigus vulgaris and molluscum contagiosum.[4] The Tzanck smear cytology has been applied not only to bring the diagnosis of virus infected bullous or Pemphigus bullous disease but also in diagnosis of bullous pemphigoid, molluscum contagiosum and other vesicobullous lesion.[5]

This study was conducted to assess Tzanck smear cytology for cytomorphological features and diagnosis in various vesicobullous lesion and correlate the findings with subsequent skin biopsy.

Materials and Methods
The present study was conducted in division of Cytology, Department of Pathology, Jawaharlal Nehru Medical College, DMIMSU, Sawangi (Meghe), Wardha during May 2006 to October 2008. A total of 104 patients with vesicobullous and ulcerative lesions attending skin & venereal disease OPD were included.

Inclusion Criteria: (1) Patients who were clinically diagnosed to have vesicobullous or ulcerative lesions due to Herpes simplex, vericella zoster, Pemphigus vulgaris, bullous pemphigoid, insect bite and other vesiculobullous disease; (2) Lesions of recent onset (Usually <72 hrs); (3) Patients suspected of ulceration due to molluscum contagiosum.

Exclusion Criteria: Patients in remission, on medication and with relapse of vesicobullous lesions.

104 patients were broadly divided in the categories of infectious vesicobullous disease, immunovesico bullous disease, molluscum contagiosum and othe specified clinical diagnosis. These patients were later grouped for the sake of study in 3 groups (1) Only cutaneous disease; (2) Mucocutaneous disease; (3) only mucosal disease.

Tzanck preparation technique is as follows[1, 3,6,7,8]

The vesicobullous lesions were cleaned with absolute ethyl alcohol. The peripheral portion of the blister was deroofed with 26 gauge needle and roof was reflected. Excess fluid was gently removed by bloating and base of the blister was gently but thoroughly was scraped with blunt end of scalpel. The cellular material obtained was spread smoothly without scrubbing onto clear slide. A dry fixed smear underwent MGG staining and wet fixed smear underwent PAP staining. Tzanck smear cytology was reported and was correlated with skin biopsy results.

Observation

The study comprised of 104 patients who underwent Tzanck smear cytology in evaluation of vesicobullous lesion. Tzanck smear preparation of two cases was suboptimal for cellularity and therefore not included in the study. Out of 104 cases 42 (40.38%) cases were female patients and 62 (59.62%) were male patients. Youngest patient was 12yrs old and oldest being 87yrs old. Maximum number of patients was in age group 31–40yrs.

Table 1: Distribution of clinical diagnosis and lesion type (n = 102)

Type of Disease	Clinical Diagnosis	Total
Infectious Bullous Disease	Herpes zoster	37 (36.27%)
	Herpes simplex	05 (4.90%)
	Molluscum contagiosum	04 (3.92%)
Immunobullous Disease	Pemphigus vulgaris	31 (30.39%)
	Pemphigus foliaceus	02 (1.96%)
	Bullous pemphigoid	20 (19.61%)
Other Specified diagnosis	Insect bite	01 (0.98%)
	Contact dermatitis	01 (0.98%)
	Drug induced eruptions	01 (0.98%)
Total		**102**

The frequent clinical diagnosis was that of Herpes zoster followed by Pemphigus vulgaris.

Table 2: Clinical examinations of lesions and their distribution (n = 102)

Type of Lesion	Cutaneous	Mucocutaneous	Mucosal (Oral)
Vesicopustular	27	01	02
Vesicobullous	60	08	--
Ulcers	04	--	--
Total	91	09	02

Vesicobullous diseases were more commonly associated with cutaneous and mucocutaneous lesion while mucosal involvement (oral) was more with vesicopustular lesions.

Table 3: Distribution of cytodiagnosis

Cytological Diagnosis		Number of cases
Herpes zoster		30 (29.41%)
Herpes simplex		03 (2.94%)
Moluscum contagiosum		03(2.94%)
Pemphigus vulgaris		31 (30.39%)
Pemphigus foliaceus		02 (1.96%)
Bullous pemphigoid		12 (11.76%)
Other	Insect Bite	01 (0.98%)
	Contact dermatitis	01 (0.98%)
	Drug induced eruption	01 (0.98%)
	Non specified inflammatory bullous lesion	18 (17.65%)
Total		**102**

The commonest cytodiagosis was Herpes zoster followed by Pemphigus vulgaris and bullous pemphigoid. 18 cases were reported as inflammatory bullous lesion as they lack evidence of viral infection and also lack the presence of acantholytic cells. A case that is reported as drug eruption gave a positive history of drug intake followed by eruption over skin. Similarly, positive history was available with cases of inscect bite and contact dermatitis. The inadequacy of material in 2 cases of the Tzanck cytology preparation was due to secondary infection occurring at the ulcerative lesion and so was reported as paucicellular inadequate smear on cytology.

30 cases were biopsied and therefore available for diagnosis and the result is shown in table 4.

Table 4: Cyto-histology diagnosis correlation in 30* cases

Tzanck smear cytology diagnosis	No. of cases available for Biopsy	Histological diagnosis	% correlation
Herpes zoster (30 cases)	08	Herpes zoster (08)	100%
Pemphigus vulgaris (31 cases)	14	Pemphigus vulgaris (14)	100%
Pemphigus foliaceus (02 cases)	01	Pemphigus foliaceus (01)	100%
Bullous pemphigoid (12 cases)	06	Bullous pemphigoid (06)	100%
Total	**29**	**29**	

*(01 case from nonspecific inflammatory bullous lesion had undergone skin biopsy that was subsequently reported as bullous pemphigoid).

There were 30 cases cytodiagnosed as Herpes zoster out of which 08 underwent skin biopsy. The biopsy diagnosis in all the 08 cases was Herpes diagnosis (100%). Out of 31 cases cytodiagnosed as Pemphigus vulgaris 14 underwent biopsy and were diagnosed as Pemphigus vulgaris (100%) on biopsy. There were 06 cases of bullous pemphigoid who underwent biopsy and all 06 cases confirmed the cytodiagnosis (100%). Of the 02 cases of Pemphigus foliceus 01 has undergone skin biopsy. The histological diagnosis in this case was concurrent with cytodiagnosis. Thus, it has been found that there existed 100% cytohisto correlation.

In the group of 18 cases of non specific inflammatory bullous lesion a single case underwent biopsy in which a histodiagnosis rendered was bullous pemphigoid. The observation in this group suggested for diligent microscopy, non-representation of cells and possible under interpretation of the lesion. This group was also observed to be dicey for a non-representative cytomorphology.

Discussion

This study comprised of 104 patients who underwent Tzanck smear cytology in evaluation of vesicobullous lesion. Tzanck smear preparation of two cases was suboptimal for cellularity and therefore not included in the study. Out of 104 cases 42 (40.38%) cases were female patients and 62 (59.62%) were male patients. Maximum number of patients was in age group 31–40yrs which correlates with study of Wu, Schapiro & Harrist 2005[9] which states that the autoimmune bullous lesions are common in adults.

Suitability of Tzanck smear preparation in vesicobullous lesion primarily for diagnosis of Herpes virus, Pemphigus vulgaris, bullous pemphigoid and molluscum contagiosum has been observed by many author.[1,3,7,10-15] In present study 30 cases were cytodiagnosed as Herpes zoster, out of these 08 underwent skin biopsy. The biopsy diagnosis of all these cases was consistent with that of Herpes zoster showing 100% correlations. This observation of correlation is comparable with study of Solomon et al 1986[12] who instead correlated with clinical diagnosis. In the present study, out of 31 cases cytodiagnosed as Pemphigus vulgaris 14 cases underwent biopsy, all were confirmed to be Pemphigus vulgaris on biopsy thus, achiving 100% cytohistocorelation. Similar cytohistocorelation of 100% have been seen by Mignogna et al 1997,[16] Aithal et al 2007[8] Out of 12 cases cytodiagnosed as Bullous pemphigoid 06 cases underwent skin biopsy, all of which conformed the cytodiagnosis. Such correlation was also seen by Verma et al 1993[17] in which 03 cases of bullous pemphigoid was studied.

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 vessicobullous-ulcerative mucocutaneous lesion. The Tzanck smear cytology can show parallel cytomorphological characters as seen with skin biopsy and thus Tzanck smear can alienate the need of the skin biopsy in the multitude of skin lesions.

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