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Original Research Article

Role of cytotechnique in evaluation of non infectious vesiculobullous lesions of skin

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Abstract

Aim: To evaluate the efficacy and diagnostic accuracy of cytological techniques in evaluation of noninfectious vesiculobulloous lesions of skin.

Materials and methods: Tzanck smear prepared from vesiculobullous lesions. Giemsa stainining of cytology smears. Biopsy of lesions where possible.

Result: 22 patients (indoor/outdoor) with vesiculobullous skin lesions were subjected to cytological examination and biopsy. Twenty two cases of vesiculobullous lesions were comprised of 12 cases (54.54%) of bullous pemphigoid, 7 cases (12.96%) of pemphigus vulgaris, two cases of linear IgA bullous dermatosis (9.09%) and one case of pemphigus foliaceus (1.85%). Sensitivity, specificity and diagnostic accuracy of tzanck smear for diagnosing vesiculobullous lesions were 100%, 100% and 100% respectively

Conclusion: Cytological examination is a very simple and useful modality, requires minimum equipments and can be performed in outpatient clinic. The procedure is safe, free from complications and is well tolerated by patients.

Keywords: Blister, tzanck, vesiculobulloous lesions.

1. Introduction

The vesiculobullous reaction pattern is characterized by the presence of vesicles or bullae at any level within the epidermis or at the dermoepidermal junction Diagnostic cytology was first used in cutaneous disorders by Tzanck in 1947, for the diagnosis of vesiculobullous disorders, particularly herpes simplex.[1] Since then, the role of diagnostic cytology has expanded tremendously. Still role of cytology in diagnosis of skin lesions is controversial because they are easily available for excision. With the ever increasing use of cytotechniques in clinical practice there is a need for detailed cytological description of the spectrum of various skin lesions and the problems during cytodiagnosis.

1.1 Aims and objective

To evaluate the efficacy and diagnostic accuracy of cytological technique in vesiculobullous skin diseases and and to correlate the cytological, histopathological and clinical findings of vesicobullous lesions of skin.

2. Material and methods

A prospective study was conducted in the Department of Pathology and Dermatology, Indira Gandhi Medical College, Shimla (HP). The samples for cytological and histopathological examination were collected from the indoor and outdoor patients of all ages with vesiculobullous lesions of the skin.

Tzanck smears for vesiculobullous lesions were done. Fresh vesicle or bulla was selected, cleaned with 70% alcohol and incised with scalpel, reflecting the roof of the bulla. Base of the blister was scraped gently with the blunt end of scalpel and the material smeared on a glass slide and air dried. The dried smears stained with Giemsa stain.

Biopsy for histopathological evaluation was done and H&E staining was done. Validation of cytological diagnosis was done on the basis of histopathological diagnosis.

3. Result

In non infectious vesiculobullous disorder bullae (63.64%) followed by vesicles (59.09%) were the common presenting lesions. The lesions had predilection for trunk. Average age of presentation with vesiculobullous lesions was 58.36 years and patient age ranged from 22- 87 years with maximum patients (31.81%) in the age group of 61-70 years. Slight male predominance was seen with M: F ratio of 1.4:1.

Spectrum of 22 non infectious vesiculobullous lesions on cytology has been depicted in table 1.

Table 1: Spectrum of non infectious vesiculobullous lesions on cytology (n=22)

Cytological diagnosis	No. of cases	Percentage
Pemphigus vulgaris (PV)	8	36.36%
Bullous pemphgoid (BP)	12	54.54%
Linear IgA bullous dermatosis (LABD)	02	9.09%
Total	22	100%

Bullous pemphigoid was the most common non infectious vesicobullous lesion encountered followed by pemphigus vulgaris and linear Ig A bullous dermatosis.

Table 2: Tzanck smear cytology in non infectious vesiculobullous lesions (n=22)

	Acantholytic Cell	Neutrophil	Eosinophil	Lymphocyte
PV (n=7)	07(100%)	06 (85.7%)	03(42.8%)	03(42.8%)
PF (n=1)	01(100%)	01(100%)	01(100%)	01(100%)
BP (n=12)	-	09(75%)	12(100%)	03 (25%)
LABD (n=2)	-	02(100%)	-	-

Cytological examination using a Tzanck preparation demonstrated acantholytic cells in all the 7 cases of pemphigus. Acantholytic cells had condensed cytoplasm about an enlarged nucleus with peripherally palisaded chromatin and enlarged nucleoli (Table 2).

12 of 22 cases diagnosed as bullous pemphigoid showed scarcity of epithelial cells and an abundance of leukocytes, particularly eosinophils. Two cases of LABD were seen in present study and comprised predominantly of neutrophils (Table 2).

Table 3: Spectrum of vesiculobullous lesions on histopathology (n=22)

Category	No. of cases	Percentage
PV	07	31.8 %
PF	01	4.54%
BP	12	54.54%
LABD	02	9.09%
Total	22	100%

Table 4: Cytohistological correlation for non infectious vesicobullous lesions (n=22)

PV	8	PV PF	7 1
BP	12	BP	12
LABD	02	LABD	2

Table 5: Statistical analysis of the results obtained on cytohistological correlation

	TP	TN	FP	FN
Non-infectious vesiculobullous	22	56	0	0

On histopathological evaluation of these 22 cases, seven cases of pemphigus vulgaris and one case of pemphigus foliaceous showed suprabasal blister and subcorneal blister respectively with blister cavity filled with acantholytic cells and inflammatory cells. Twelve cases of bullous pemphigoid were seen in present study and revealed subepidermal bullae with superficial perivascular neutrophilic infilterate. Two cases diagnosed as LABD revealed subepidermal bullae with neutrophilic infilterate along dermoepidermal junction (Table 3). It was observed that one case of pemphigus foliaceous was diagnosed as pemphigus vulgaris on cytology as both reveal acantholytic cells on Tzanck smear (Table 4). Senstivity, specificity and diagnostic accuracy calculated for non-infectious vesiculobullous was 100 % (Table 5).

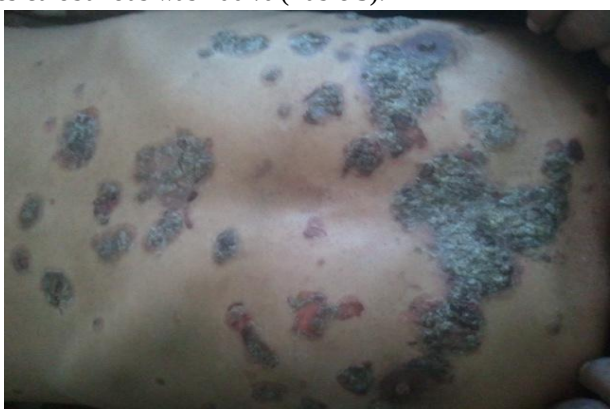

Fig 1: Pemphigus vulgaris-crusted lesions

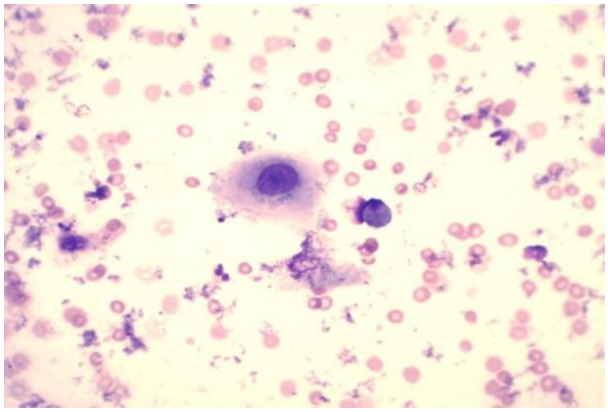

Fig 2: Acantholytic cell, Pemphigus vulgaris (Giemsa 40X)

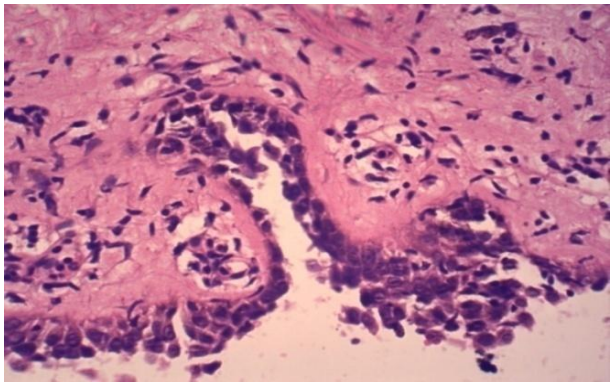

Fig 3: Pemphigus vulgaris (HPE, 40X)

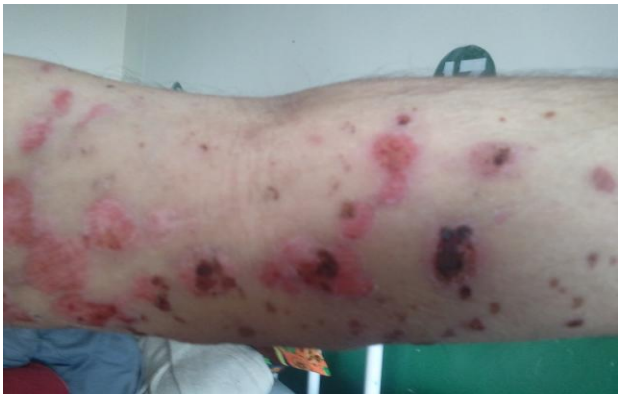

Fig 4: Bullous Pemphigoid (crusted erosions)

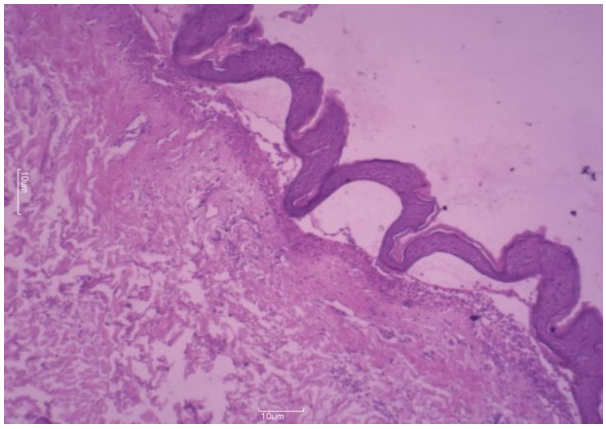

Fig 5: Bullous Pemphigoid. (HPE, 10X)

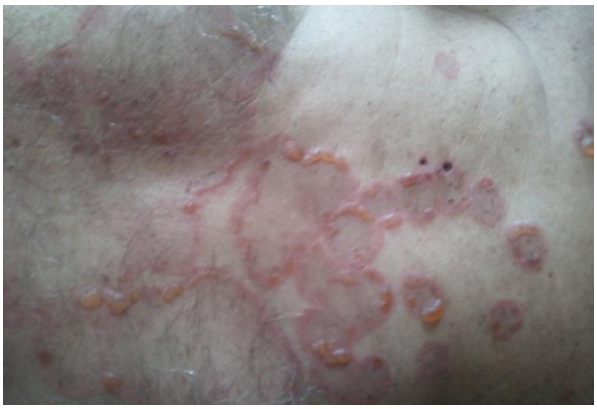

Fig 5: LABD, erythematous plaque with polycyclic vesicles

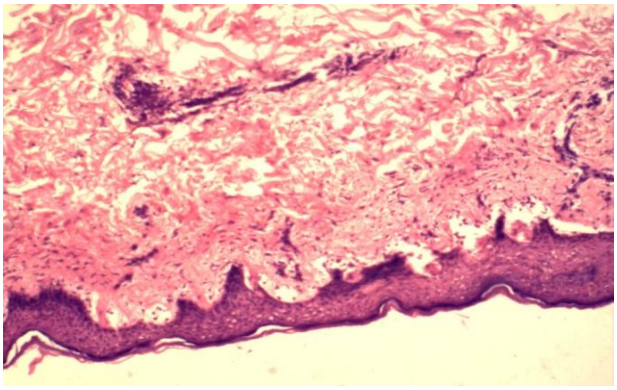

Fig 6: LABD. (HPE, 10X)

4. Discussion

Vesiculobullous lesions result from a defect, congenital or acquired, in the adhesion of keratinocytes.[2] Tzanck smear is generally used for the diagnosis of the pemphigus group of autoimmune bullous diseases and mucocutaneous herpes virus infections. There are only a few studies in the literature investigating its diagnostic value. Gupta LK in their study of Tzanck smear concluded that although not a substitute for standard histology, in the hands of an experienced dermatologist Tzanck smears can aid in establishing the clinical diagnosis with ease and rapidity and can serve as an adjunct to routine histologic study. The technique is cheap, easy to perform and does not cause any discomfort to the patient [1].

Durdu M *et al* aimed to determine the diagnostic value of tzanck smears in moist (erosive, vesicular, bullous, and pustular) skin lesions and to develop an algorithmic approach for the diagnosis of these types of skin lesions according to the Tzanck smear findings. Tzanck smear was performed in a total of 400 patients with moist skin lesions. The sensitivity of multinucleated giant cells and acantholytic cells in herpetic infections, acantholytic cells in pemphigus were 84.7% and 100%, respectively.[3]

A study conducted by Fauziya *et al* included 12 cases of pemphigus. Tzanck smear was done for cytological material and biopsy was obtained for histopathological examination. Adequate smears were obtained in 9 cases and revealed acantholytic cells. Completely concordant results for tzanck smear cytology and histopathology were obtained.[4]

Patel *et al* studied tzanck smears from 12 cases diagnosed as pemphigus vulgaris on histopathology. 75% cases showed acantholytic cells and provided successfully a quick, easy, convenient tool for aiding the clinical diagnosis However; they also observed that it was difficult to take Tzank smear in some patients as patients were presented with predominantly crusted lesions.[5]

In present study acantholytic cells were noticed in tzanck smears of 100% cases of pemphigus evaluated by

histopathology while Nurul Kabir *et al* [6] and Patel *et al* [7] noticed acantholytic cells in 87.5% and 75% cases of pemphigus.

Single case revealing mixed inflammatory infilterate along with acantholytic cells was diagnosed as pemphigus vulgaris on tzanck smear but was diagnosed as case of pemphigus foliaceus on histopathology. Similar observations were made by Sabir *et al* highlighting that distinction between pemphigus vulgaris and pemphigus foiaceus was not significant on cytology.

By tzanck smears accurate diagnosis can be made in pemphigus group of disease where acantholytic cells were seen but in most cases of sub epidermal blisters the smear findings are nonspecific. Before definitive diagnosis is to be made it requires clinical correlation.

On histopathology it is difficult to distinguish LABD from bullous pemphigoid but is necessary as treatment is different for both. Therefore immunoflorescence study may be required. Our diagnosis of subepidermal cleft was supported by direct immunoflorescence.

Overall sensitivity of cytology in diagnosis of vesiculobullous lesions was 100% in present study which is higher than 88.2% senstivity observed by Sabir *et al*[4].

5. Conclusion

Tzanck smear is a rapid, simple inexpensive and reliable test useful for diagnosis of vesiculobullous lesions especially pemphigus group where acantholytic cells are present. Although not a substitute for standard histology, in the hands of an experienced dermatologist Tzanck smears can aid in establishing the clinical diagnosis with ease and rapidity and can serve as an adjunct to routine histologic study.

References

[1]. Gupta LK, Singhi MK. Tzanck smear: A useful diagnostic tool. *Indian J Dermatol Venereol Leprol*. 2005;71:295-9

[2]. Weedon D. Skin pathology. 2nd edition. New York: Churchill Livingstone; 2002.p 129-191.

[3]. Durdu M, Baba M, Seçkin D. The value of Tzanck smear test in diagnosis of erosive, vesicular, bullous, and pustular skin lesions. *J Am Acad Dermatol*. 2008 Dec; 59(6): 958-64.

[4]. Sabir F, Aziz M, Afroz N, Amin S. Clinical and cytohistopathological evaluation of skin lesions with special reference to bullous lesions. *Indian J Pathol Microbiol.* 2010; 53: 41-46.

[5]. Patel P, Kapuriya D, Chiplonkar S. A clinico-pathological study of 22 cases of pemphigus. *National Journal of Medical Research*. 2012; 2(3): 269.

[6]. Nurul Kabir AKM, Kamal M and Choudhury AM. Clinicopathological correlation of blistering diseases of skin. *Bangladesh Med Res Counc Bull* 2008; 34: 48-53.

[7]. Patel PR, Patel PB, Chiplonkar SG. Histopathological study of vesiculobullous lesions of the skin: A study at tertiary care hospital. *Int J of Med Sci Public Health.* 2014; 3 (6): 738-740.