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Original Research Article

Benign and malignant lesions of the breast: clinico-pathological perspective from a government teaching hospital in West Bengal, India

Saurav Sarkar[1], Arista Lahiri[2], Soumyajyoti Bandyopadhyay[3]*, Snehasish Das[4], Tamal Chakraborty[4]

[1]Department of Pathology, College of Medicine and JNM Hospital, Kalyani, West Bengal, India
[2]Department of Community Medicine, Medical College and Hospital, Kolkata, West Bengal, India
[3]Department of Forensic Medicine and Toxicology, [4]MBBS Student, College of Medicine and JNM Hospital, Kalyani, West Bengal, India

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***Correspondence:**
Dr. Soumyajyoti Bandyopadhyay,
E-mail: dr.soumyajyoti@gmail.com

ABSTRACT

Background: While breast cancer is one of the most commonly diagnosed cancer more than half of the women develop some benign disease of breast in their lifetime. The current study was conducted to describe the clinico-pathological findings associated with breast diseases and study their relationship.
Methods: A record-based cross-sectional study was conducted on the samples of breast tissue obtained by fine needle aspiration cytology (FNAC) examination. The clinical variables like age, sex, presenting complaint, involved side (right/left/both) etc. were taken from the clinical notes sent, and nature of the aspirate, histopathological diagnosis, nature of the diagnosed disease (benign/malignant), and axillary metastasis were taken as variables from pathological examination.
Results: The mean age of the patients was 33.49 years (±13.24 years) with majority belonging to 20-40 years. Among the 184 specimens examined, 94.57% belonged to female patients. The most frequent presentation was with lump (95.11%). Complaint arising out of right breast (47.83%) were higher compared to left breast (40.76%). Involvement of the supero-lateral quadrant was seen in 75.54%. In 30.44% of the cases the material was bloody or blood-mixed. Majority of the patients (86.41%) were diagnosed with benign disease commonest being fibroadenoma. Ductal carcinoma was the commonest malignant lesion. Younger age group, absence of bloody discharge and absence of peau d'orange were associated with benign lesion in a statistically significant way (p-value <0.001).
Conclusions: In consonance with published literature the findings suggest association of older age group with malignant lesions. Blood-mixed aspirate, peau d'orange appear to be danger signs.

Keywords: Benign, Breast, Breast pathology, Fine needle aspiration cytology, Malignant

INTRODUCTION

Breast diseases are one of the most common problems in women in present days. Along with the growing burden in the middle and high-income countries, the burden is also growing in the low-income countries, thus making it a global public health concern.[1] Most of them are having chief complaints of lump, pain, change in skin or shape of breast.[2] Breast diseases classified in details as per the International Classification of Diseases-10, can be broadly grouped as, benign and malignant lesions.[3,4] Breast cancer is most commonly diagnosed cancer in the

world and that is the leading cause of death in any cancer in women. While breast cancer on a rising trend globally, impact the overall wellbeing of a woman in terms of mental and physical health ensuing a residual effect even after cure, the benign lesions as well affect the quality of life and incur economic loss at both individual and societal level.[5] Almost 50% of woman develops some benign breast disease in their lifetime.[6] Breast cancer is not yet preventable but early diagnosis and treatment gives outstanding outcome of the disease. In the triple assessment of breast diseases, a breast lump is diagnosed first clinically then aided by radiology and pathology. Fine Needle Aspiration Cytology (FNAC) is the key in the diagnosis of breast lesions.[7,8] Then diagnosis is confirmed by Histopathology and immunohistochemistry if required.[9]

Although facility of FNAC is now widely available but not still accessible in the rural and suburban areas of the country. Due to lack of facility often the patients come in late stage in health facility and that badly affects the prognosis. If it is possible to differentiate between benign and malignant lesions clinically, diagnosis of breast lesions can be done much earlier and there will be better outcome of breast cancers and reduction of unnecessary anxiety in women with benign diseases. The current study aims at describing the clinico-pathological findings related to the specimens examined and examining the relationship of some selected factors with the outcome of a malignant finding.

METHODS

Study design and technique

A record-based cross-sectional study was conducted from January 2018 to June 2018 in the Department of Pathology of a government teaching hospital in sub-urban West Bengal. The attendance of the patients to the hospital were random by nature of the process. Since available records and reports were accessible, no further sampling was employed before data collection.

The records of the histopathological examination performed on the breast tissue specimens within the mentioned duration were studied. The records of the specimens with clinical history of the patients were included in the study. On histopathological examination the reports which were inconclusive, were excluded from the analysis. Data collection was done using a pre-designed pre-tested anonymous semi-structured data collection form. This form contained the principal findings of histopathological examination and also socio-demographic variables available from record register.

Study variables

Socio-demographic variables that were available from record register maintained in the department were considered for analysis. The socio-demographic variables included were age of the patients and gender of the patients. Among the clinical variables available from clinical history, presentation of the patients e.g. with pain, lump, discharge and peau d'orange appearance, involvement of breast-side and quadrant were included. The third set of variables considered were variables pertaining to pathological examination. Nature of the aspirate, histopathological diagnosis, nature of the diagnosed disease (benign/malignant), and axillary metastasis were considered for analysis.

Data analysis

Total of 184 reports of the samples were included in the current study. The data were entered and analysed in Epi Info 7 software (Centers for Disease Control, Atlanta).[10] The descriptive statistics were obtained regarding clinico-pathological variables as per different age categories. The age of the patients were grouped into ≤20 years, 20-40 years, 40-60 years, >60 years. The proportions of clinico-pathological variables were analysed within the different age categories and also among the total samples included for analysis. These clinico-pathological variables were then considered for examining statistical association with nature of the histopathological diagnosis i.e. benign/malignant condition. Chi-squared test was used to statistically test for association. In testing for statistical association, where any cell contained a zero value, Fisher's exact test was used to obtain the level of statistical significance. A two-tailed P-value of <0.05 was considered significant.

RESULTS

Background information

The mean age of the patients was observed to be 33.49 years (±13.24 years). The minimum age was 12 years while maximum age observed was 75 years. Among the 184 specimens examined, 94.57% belonged to female patients and the rest (5.43%) were from male patients. Among these female patients the mean age was 33.16 years (±12.7 years), with youngest patient aged 13 years and the oldest aged 75 years.

On the other hand, among the 10 male patients (5.43%) the mean age was 39.4 years (±20.66 years). The minimum age among male patients was 12 years and maximum 65 years.

Clinico-pathologic observations

The clinical presentations of the patients, whose breast-tissue sample were examined are given in Table 1. The most frequent presentation was with lump (95.11%). Majority of the patients belonged to age group of 20-40 years. Within this age group 96% patients had reported a complaint of lump. For patients belonging to age groups ≤20 years and 40-60 years 93.75% and 93.62% reported lump. Among the five patients aged >60 years, everyone

had the complaint. Pain in the breast was the next frequent complaint encountered, present among 42.39% of the patients overall. Among patients aged 20-40 years 40% had reported pain, while 40.63% aged ≤ 20 years and 46.81% within the age group 40-60 years encountered pain. Three patients belonging to the elderly group complained of pain at presentation. Discharge from or around nipple was present in 7.07% of the patients, with mostly encountered in the 40-60 years group. Among the mentioned age group 14.89% reported of having discharge. Similarly, peau d'orange appearance was noticed among 3.26% of the patients all of whom were aged between 40-60 years. The percentage of patients reporting with complaint arising out of right and left breast were 47.83% and 40.76% respectively. Some patients (11.41%) reported involvement of both breasts. In the age group of 20-40 years majority had involvement of right breast (54%) but in the age groups ≤ 20 years and 40-60 years majority had complaint involving the left breast (43.75% and 53.19%). In the younger age group 28.13% had involvement of both breasts.

Table 1: Clinical presentation of the patients with breast pathology requiring histopathological examination (n = 184).

Clinical factors	Age groups N (%)				
	≤ 20 years	20 to 40 years	40 to 60 years	> 60 years	Total
Clinical presentation					
Lump	30 (93.75%)	96 (96.00%)	44 (93.62%)	5 (100.00%)	175 (95.11%)
Pain	13 (40.63%)	40 (40.00%)	22 (46.81%)	3 (60.00%)	78 (42.39%)
Discharge	1 (3.13%)	5 (5.00%)	7 (14.89%)	0 (0.00%)	13 (7.07%)
Peau d'orange	0 (0.00%)	0 (0.00%)	6 (12.77%)	0 (0.00%)	6 (3.26%)
Quadrants involved					
Upper outer	25 (78.13%)	77 (77.00%)	33 (70.21%)	4 (80.00%)	139 (75.54%)
Upper inner	1 (3.13%)	7 (7.00%)	4 (8.51%)	0 (0.00%)	12 (6.52%)
Lower inner	2 (6.25%)	4 (4.00%)	3 (6.38%)	1 (20.00%)	10 (5.43%)
Lower outer	3 (9.38%)	8 (8.00%)	5 (10.64%)	0 (0.00%)	16 (8.70%)
Central	1 (3.13%)	4 (4.00%)	2 (4.26%)	0 (0.00%)	7 (3.80%)
Breast involved					
Right	9 (28.13%)	57 (57.00%)	19 (40.43%)	3 (60.00%)	88 (47.83%)
Left	14 (43.75%)	34 (34.00%)	25 (53.19%)	2 (40.00%)	75 (40.76%)
Both	9 (28.13%)	9 (9.00%)	3 (6.38%)	0 (0.00%)	21 (11.41%)
Total	32 (100.00%)	100 (100.00%)	47 (100.00%)	5 (100.00%)	184 (100.00%

Table 2: Cytological findings obtained on histopathological examination (n = 184).

Cytological findings	Age groups N (%)				
	≤ 20 years	20 to 40 years	40 to 60 years	> 60 years	Total (%)
Benign lesions					
Fibroadenoma	14 (43.75)	33 (33.00)	3 (6.38)	0 (0.00)	50 (27.17)
Fibroadenosis	4 (12.50)	15 (15.00)	5 (10.64)	0(0.00)	24 (13.04)
Benign breast disease	5 (15.63)	19 (19.00)	9 (19.15)	1 (20.00)	34 (18.48)
Fibrocystic disease	1 (3.13)	17 (17.00)	5 (10.64)	1 (20.00)	24 (13.04)
Other benign lesions	7 (21.88)	11 (11.00)	8 (17.02)	1 (20.00)	27 (14.67)
Total (benign lesions)	31 (96.88)	95 (95.00)	30 (63.83)	3 (60.00)	159 (86.41)
Malignant lesions					
Ductal carcinoma	0 (0.00)	0 (0.00)	12 (25.53)	2 (40.00)	14 (7.61)
Adenocarcinoma	0 (0.00)	3 (3.00)	1 (2.13)	0 (0.00)	4 (2.17)
Other malignant lesions	1 (3.13)	2 (2.00)	4 (8.51)	0 (0.00)	7 (3.80)
Total (malignant lesions)	1 (3.13)	5 (5.00)	17 (36.17)	2 (40.00)	25 (13.59)

Overall 75.54% patients were found to have involvement of supero-lateral quadrant of the involved breast followed by infero-lateral (8.7%), supero-medial (6.52%), infero-medial (5.43%) quadrants and central area (3.80%). Among the patients of age groups ≤20 years, 20-40 years, 40-60 years and >60 years involvement of supero-lateral quadrant was observed among 78.13%, 77%, 70.21% and 80% respectively. Similar to the overall findings the

proportion of involvement of supero-medial and infero-lateral quadrants was comparable among the patients aged 20-40 years (7% and 8% respectively) and also among those aged 40-60 years (8.51% and 10.64% respectively).

Figure 1 summarizes the key characteristics of the aspirates obtained. In majority of the cases (44.02%) the aspiration yielded breast tissue material. In 30.44% of the cases the material was bloody or blood-mixed. Fatty aspirate was found in case of 14.13% of the cases. However, in about 1.63% of the cases the aspirated material was purulent or pus-mixed. A decreasing trend of obtaining breast tissue material as the aspirate from the lesion was observed with progressing age, while the opposite trend was observed for fatty aspirate. In the age groups ≤20 years, 20-40 years and 40-60 years respectively 50%, 44% and 42.55% yielded tissue material in the aspirate, while fatty material was obtained in 6.25%, 18% and 21.28% of aspirates in the respective age groups. In the age groups ≤20 years, 20-40 years bloody or blood-mixed aspirate was obtained from 28.13% and 29% of the samples. In the 40-60 years age group 31.92% of the samples yielded bloody or blood-mixed aspirate. Among the elderly patients three patients had bloody aspirate.

Table 3: Relationship of cytological features observed with selected clinico-pathological factors (n = 184).

Clinico-pathologic factors	Cytological feature			P value[a]
	Benign lesion N (%)	Malignant lesion N (%)	Total N (%)	
Age groups				
20 years and less	31 (19.50)	1 (4.00)	32 (17.39)	<0.001
> 20 years to 40 years	95 (59.75)	5 (20.00)	100 (54.35)	
>40 years to 60 years	30 (18.87)	17 (68.00)	47 (25.54)	
>60 years	3 (1.89)	2 (8.00)	5 (2.72)	
Sex				
Female	150 (94.34)	24 (96.00)	174 (94.57)	1.000
Male	9 (5.66)	1 (4.00)	10 (5.43)	
Pain				
Absent	87 (54.72)	19 (76.00)	106 (57.61)	0.045
Present	72 (45.28)	6 (24.00)	78 (42.39%)	
Lump				
Absent	9 (5.66)	0 (0.00)	9 (4.89%)	0.612b
Present	150 (94.34)	25 (100.00)	175 (95.11%)	
Discharge				
Absent	153 (96.23)	18 (72.00)	171 (92.93)	<0.001
Present	6 (3.77)	7 (28.00)	13 (7.07)	
Peau d'orange				
Absent	159 (100.00)	19 (76.00)	178 (96.74)	<0.001[b]
Present	0 (0.00)	6 (24.00)	6 (3.26)	
Quadrant involved				
Upper outer	118 (74.21)	21 (84.00)	139 (75.54)	0.683
Upper inner	12 (7.55%	0 (0.00)	12 (6.52)	
Lower inner	9 (5.66%	1 (4.00)	10 (5.43)	
Lower outer	14 (8.81)	2 (8.00)	16 (8.70)	
Central	6 (3.77)	1 (4.00)	7 (3.80)	
Blood in aspirate				
Absent	120 (75.47)	8 (32.00)	128 (69.57)	<0.001
Present	39 (24.53)	17 (68.00)	56 (30.43)	
Pus in aspirate				
Absent	156 (98.11)	25 (100.00)	181 (98.37)	1.000b
Present	3 (1.89)	0 (0.00)	3 (1.63)	
Total	159 (100.00)	25 (100.00)	184 (100.00)	

a: 2-tailed, computed from Pearson's Chi-squared test; b: 2-tailed, computed from Fisher's Exact test

The histopathological findings are presented in Table 2. Overall 86.41% of the patients were histo-pathologically diagnosed with benign disease of the affected breast, and the rest had malignant lesion. Most of the patients had Fibroadenoma (27.17%), followed by benign breast disease (18.48%), Fibrocystic disease and fibroadenosis (13.04%). Ductal carcinoma was diagnosed with 7.61% of the patients. However, Adenocarcinoma was found in four patients. Malignant lesions were mostly observed in the age group of 40-60 years. The two elderly patients having malignant lesion were diagnosed with Ductal carcinoma of the affected breast. Three patients in the age group of 20-40 years were diagnosed with Adenocarcinoma. In the younger age group Fibroadenoma was most common (43.75%). However, amongst those aged 20-40 years 33% had Fibroadeoma. Proportion of Benign breast disease was found to be marginally higher in the 20-40 years age group (19%) compared to the younger patients (15.63%). Among the malignant lesions, in case of seven patients axillary metastasis was present.

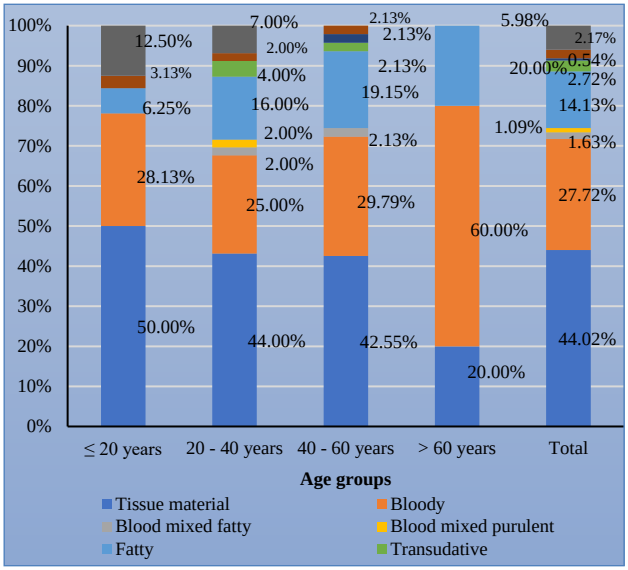

Figure 1: Key characteristics of the aspirate obtained from the lesions of the involved breast(s) (n = 184).

The relationship of histopathological diagnosis and the different clinico-pathological factors are given in Table 3. Age of the patients were found to be statistically significantly associated with cytological diagnosis. Younger age group was statistically associated with benign lesions while the proportion of older patients were found to be associated with malignant lesion (P-value <0.001). There was no observed statistical association amongst gender and benign/malignant lesion. While presentation of lump was not statistically associated with malignant nature of the lesion, complaint of pain was statistically associated with benign nature of the disease. Appearance of Peau D'Orange and presence of discharge both were statistically significantly related to lesion being malignant (P-value <0.001). While a bloody or blood-mixed aspirate was statistically significantly associated with malignant lesion (P-value <0.001), no such association was observed in case of purulent aspirate.

DISCUSSION

Out of the total 184 samples analysed most belonged to patients in between 20-60 years. As presumed conceptually lump was the most common presenting feature (95.11%) in any age group and Peau d'orange was the least common (3.26%) feature.[11] These findings were in consonance with a study by Murali et al, where the authors described lump as the most common presentation for patients whose samples are usually sent for pathological examinations. In a Nigerian study by Ayoade et al and also more recently in a study conducted at Tanzania the commonest presenting feature for bening breast disease or breast disease in general was found to be breast lump.[2,12]

In the current study around three-fourth of the lesions were reported at supero-lateral (upper outer) quadrant, similar to what Chalya et al observed in their study in 2016.[12] Chalya et al also described that right breast is very often involved. In harmony with this finding the authors of the current article observed a ratio of 1.1:1 for distribution of lesion in right side: left side with 11.41% of disease involved bilaterally.[12]

In age specific distribution, benign disease of breast is more common in 20 – 40 years age group and malignant disease in >40 age. Rathi et al and Murali et al have concluded with similar findings regarding age preponderance of the benign and malignant diseases.[7,11] Chalya et al in their study on benign diseases of breast observed that the majority of their participants were in fact from a younger age group of lesser than 30 years.[12] Though this is mere evidence of statistical association, but supports the findings of the current article. To further emphasis on the fact that in older age group malignant diseases tend to occur more, aspirates from the lesion corroborates by virtue of their bloody or blood-mixed characteristic in the older patients. It is a proven fact that bloody aspirates are more often than not related to malignant changes in the breast. The fact is reflected here by means of statistical association.

Absence of discharge, absence of pain, absence of peau d'orange, absence of blood in aspirate all were statistically significantly associated with benign disease. As evident from table 3, in 20-40 years benign to malignant ratio is 19:1, whereas in 40-60 years benign: malignant is 1.76:1. Shanthi et al reported benign to malignant ratio between 20 to 40 years of age to be 8:1 but in between 40 to 60 years of age it was 1.06:1.[13] However in this comparison the sample size for the later study was nearly half compared to the current one. Another relevant issue in this regard is that the skewed ratio of benign: malignant lesion with a greater proportion of benign cases may enforce some constraint on the generalized interpretation within the group with

diagnoses of malignant lesion. The findings within those having benign breast diseases on this basis are expected to be comparatively well-founded.

On careful examination of the depicted results in table 3, presence of discharge is observed to be associated statistically with malignancy, as opposed to absence of discharge which is related to benign lesions (P-value <0.001). These findings were comparable to the findings reported by Rathi et al in their study in a similar setting.[7] Peau d'orange when absent was statistically significantly related with a benign lesion. Conceptually, the findings are consistent as peau d'orange is almost always associated with malignant diseases of the breast.[14-17]

The current article demonstrates the different observations in breast tissue samples sent for pathological examinations. The statistical associations of different clinico-pathological findings with benign or malignant conditions are also enumerated.

However, the clinical components elicited in this study were obtained from records, rather than first hand examination by the researchers. Further insight into this topic can be obtained if follow-up design is employed, which is in turn resource intensive, but with the added advantage of establishing causal relationship in comparison with associations obtained currently.

CONCLUSION

In consonance with published literature the findings suggest association of older age group with malignant lesions. Blood-mixed aspirate, peau d'orange appear to be danger signs.

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REFERENCES

1. World Health Organization. Women and health: today's evidence tomorrow's agenda. Geneva: World Organization; 2009:91.
2. Ayoade BA, Tade AO, Salami BA. Clinical features and pattern of presentation of breast diseases in surgical outpatient clinic of a suburban tertiary hospital in South-West Nigeria. Niger J Surg Off Publ Niger Surg Res Soc. 2012;18(1):13-6.
3. WHO. International Statistical Classification of Diseases and Related Health Problems. Disorders of breast. ICD-10. 2016. Available at http://apps.who.int/classifications/icd10/browse/2016/en#/N60-N64 Accessed 15 August 2018.
4. International Statistical Classification of Diseases and Related Health Problems. Malignant neoplasm of breast (C50-C50), ICD-10. 2016. Available at http://apps.who.int/classifications/icd10/browse/2016/en#/C50-C50
5. Ashing-Giwa KT, Padilla G, Tejero J, Kraemer J, Wright K, Coscarelli A, et al. Understanding the breast cancer experience of women: a qualitative study of African American, Asian American, Latina and Caucasian cancer survivors. Psych Oncol. 2004;13(6):408-28.
6. Schwartz SI, Brunicardi FC, eds. Schwartz's principles of surgery. 9th ed. New York: McGraw-Hill, Medical Pub. Division; 2010:1866.
7. Rathi M, Khalid M, Budania SK, Mittal A, Verma N. A clinicopathologic study of various breast lesions with cytohistological correlation. Muller J Med Sci Res. 2015;6(1):16-22.
8. Kuiri DSS, Saha DAK, Nandi M, Ghosh DPK, Sasmal DM, Ranjan DR. Study of pattern of presentation and diagnostic accuracy of FNAC as compared to ultrasonography, in detection of breast cancer among tribal females of Rural West Bengal. IOSR-JDMS. 2015;14(1):5-8.
9. Shah PP, Shaikh S, Panchbhai S, Vakhariya B. Clinical study of breast lump-triple assessment does help in diagnosing it better. Int Surg J. 2018;5(4):1246.
10. Center for Disease Control and Prevention. Epi Info™. CDC. Available from at https://www.cdc.gov/epiinfo/index.html 17 December 2017.
11. Murali U, Cunden SM. Clinico-pathological Correlation of breast lumps in Mauritian women. IOSR-JDMS. 2015;14(7):2279-861.
12. Chalya PL, Manyama M, Rambau PF, Kapesa A, Ngallaba SE, Masalu N, et al. Clinicopathological pattern of benign breast diseases among female patients at a tertiary health institution in Tanzania. Tanzan J Health Res. 2016;18(1).
13. Shanthi V, Ali K, Rao NM, Krishna BAR. Clinicopathological study of breast lesions in females with assessment of correlation between tumor grade and prognostic factors. J Biosci Technol. 2011;2:367-78.
14. Wiggett WS, Louw M, Karusseit VOL. The histology of peau d'orange in breast cancer: what are the implications for surgery? South Afr J Surg Suid-Afr Tydskr Vir Chir. 2012;50(3):75-8.
15. NCI Dictionary of Cancer Terms. National Cancer Institute. Available at https://www.cancer.gov/publications/dictionaries/cancer-terms Accessed 18 August 2018.

16. Inflammatory Breast Cancer. National Cancer Institute. Available at https://www.cancer.gov/types/breast/ibc-fact-sheet Accessed 18 August 2018.
17. Buchholz TA. Breast cancer: postmastectomy radiation therapy, locally advanced disease, and inflammatory breast cancer. In: Gunderson LL, Tepper JE, editors. Clinical Radiation Oncology 3rd Edition. Philadelphia: W. B. Saunders; 2012;62:1339-1353.

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