Original paper

Clinicopathological Profile of Patients with Unilateral Sinonasal Masses in Karbala

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Abstract

Background: A variety of non-neoplastic and neoplastic conditions involving the nasal cavity, paranasal sinuses, and nasopharynx. Most patients present with complaints of nasal obstruction. Other symptoms include nasal discharge, epistaxis, and disturbances of smell, oral symptoms, facial swelling, orbital symptoms, and ear symptoms. The presence of unilateral symptoms or pathology is regarded with caution as sinonasal neoplasms which may also present during their early stages with subtle symptoms that mimic an inflammatory pathology.
Objectives: The aim of the study was to analyze the histopathologic diagnosis of patients with unilateral nasal mass and identify their different clinical presentations.
Methods: A cross sectional prospective study was carried out on 34 consecutive patients with unilateral sinonasal mass at Al-Hussein Teaching Hospital and Maythem Al-Tammar Private Hospital, Karbala between April to August 2015 focusing on patient's age, sex, and complaints. . Clinical examinations and proper investigations were carried out for all patients. Biopsy was taken from all cases for histopathologic examination to confirm diagnosis.
Results: Out of total 34 patients with unilateral sinonasal masses 25 (73.5%) were males and 9 (26.5%) were females (M: F=2.8:1). The age range was 7 to 60 years with a mean age of 29.2 years. Twenty two patients were found to have non-neoplastic unilateral conditions (64.7%), while 12 patients had neoplastic unilateral conditions (35.3%). Inflammatory nasal polyp was the most common condition in non-neoplastic group (59.9%). Inverted papilloma was the commonest benign neoplastic condition (17.7%), 3 cases of non-Hodgkin's lymphomas (8.9%) represents the commonest malignant neoplasms among malignant neoplastic group and single case of adenoid cystic carcinoma.
Conclusions: Sinonasal masses have various differential diagnoses that otolaryngologists have to consider this variability in diagnosis and treatment. Nasal obstruction is the most common symptom while epistaxis and extranasal symptoms like facial pain, dental and orbital complaints were found to be higher in the neoplastic conditions. The clinician must have a high index of suspicion to rule out a neoplastic etiology in all cases of unilateral nasal mass.
Keywords: Sinonasal mass, Polyp, Nasal obstruction, inverted papilloma.

Introduction

A variety of non-neoplastic and neoplastic conditions involving the nasal cavity, paranasal sinuses, and nasopharynx are commonly encountered in clinical practice and ENT outpatient department. Most patients present with complaints of nasal obstruction [(1)]. Other symptoms include nasal discharge, epistaxis, disturbances of smell, oral symptoms, facial swelling, orbital symptoms, and ear symptoms, etc. [(2)].

Various pathologies ranging from non-neoplastic lesions to malignant sinonasal tumor may mimic a simple nasal mass. It is impossible to determine clinically what pathology lies underneath. Therefore, nasal endoscopy, radiology,

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and histopathology are employed conjointly to help us reach the diagnosis. Advanced imaging techniques like computed tomography (CT) and magnetic resonance imaging (MRI) help us to reach at a presumptive diagnosis [3].

Unilateral sinonasal symptoms, nasal masses, polyps or sinus opacities are common presentations [4]. The presence of unilateral symptoms or pathology is regarded with caution as sinonasal neoplasms may also present during their early stages with subtle symptoms that mimic an inflammatory pathology[5]. It is always the otolaryngologists endeavor to identify a neoplastic pathology early to prevent complications [6, 7, and 8].

A congenital nasal mass may present intranasally, extranasally, or as external nasal mass with or without nasal obstruction [9]. Congenital masses are predominantly midline swellings and include dermoids, gliomas and encephaloceles as common diagnoses [10].

Polyps are a common cause of nasal obstruction in adults with a prevalence of about 4% in the general population. Hippocrates gave a graphic description of nasal polypoidal masses as early as 460-370 B.C., and can thus be considered the "Father of Rhinology"[11].

Although the presentation of unilateral sinonasal pathology in ENT practice is common there are only a few publications in the literature [12, 13, and 14].

Patients and Methods

A cross sectional prospective study was carried out on 34 consecutive patients with unilateral sinonasal mass at Al-Hussein Teaching Hospital and Maythem Al-Tammar Private Hospital, Karbala between April to August 2015 focusing on patient's age, sex, and complaints, including nasal obstruction, nasal mass feeling , epistaxis, rhinorrhoea, hyposmia and deformity of nose and face. Clinical examinations were carried out for all patients followed by complete otolaryngological examination including anterior and posterior rhinoscopy and diagnostic nasal endoscopy. Appropriate radiological and laboratory investigations were done as preoperative preparations for those who need surgical intervention. The patients with nasal mass/polyp were further assessed radiologically by CT scan of paranasal sinuses. Patients presenting with inflammatory conditions were managed medically and if unresponsive then followed by endoscopic surgical treatment.

Biopsy was taken from all cases for histopathologic examination to confirm diagnosis using routine haematoxyline and eosin staining with application of immunohistochemistry for some neoplastic cases as required .Pathological terms has been used uniquely by more than one pathologist to avoid disturbed terminology. The patients were grouped as per their histopathologic diagnosis as non-neoplastic (mostly inflammatory) and neoplastic. The demographic data, presenting symptoms and radiological findings were compared between the two groups. Patients were asked for regular follow up especially those with neoplastic lesions.

Results

Out of total 34 patients with unilateral sinonasal masses 25 (73.5%) were males and 9 (26.5%) were females (M: F=2.8:1). The age range was 14 to 60 years with a mean age of 30.9 years. Twenty one patients were found to have non-neoplastic unilateral conditions (61.6%), while thirteen patients had neoplastic unilateral conditions (38.4%) table (1). Inflammatory nasal polyp of both antrochoanal and ethmoidal (allergic) types was the most common condition in non-neoplastic group (95.2%), while only single case of fungal growth were reported in this group. Inverted papilloma was the commonest benign neoplastic condition (46.2%), 3 cases of non-Hodgkin's

lymphomas (23.1%) represents the commonest malignant neoplasms among malignant neoplastic group (Table 2). Eighteen patients (81.8%) were below the age of 50 years in the non-neoplastic group (inflammatory and infectious) as compared to six patients (50%) above or equal to 50 years of age in the neoplastic group (Table 3) and there be a significant correlation between the age and histopathologic types (p value 0.016). Both neoplastic and inflammatory conditions were significantly commoner in males than females, nevertheless; there was no significant correlation between the sex and histopathologic type (p value 0.671), table (4). Nasal obstruction is the commonest symptom among both groups while hyposmia showed no significant difference in both groups. Epistaxis and facial pain (dental and orbital) were found to be significantly higher in neoplastic group, whereas nasal discharge was higher in non-neoplastic group (Table 5). The CT scan findings revealed sinus opacity, intrasinus densities and presence of high attenuation areas without bony erosions in the inflammatory conditions as compared to sinus opacity with bone expansion and thinning in mucoceles (Fig. 1). Inverted papilloma presented with sinus opacity with or without erosion whereas sclerosis, erosion and extensive soft tissue invasion was observed in the neoplastic lesions like non-Hodgkin's lymphoma.

Discussion

In this study benign unilateral nasal polyp was the most common inflammatory condition (58.8% from total number of cases), inverted papilloma was the commonest benign neoplastic condition (46.2% from benign lesions only) and benign unilateral nasal polyp is a condition that primarily affects young adults, average age 29.2 years, and this result is comparable to that obtained by Larsen et al [17]. Neoplastic lesions of the nose and sinuses are seen in patients in 5th–6th decade, with a male female ratio of 2.8:1 and inflammatory condition were common among the young adults. This result comparable with that obtained by Zbaren P, et al. [18].

Patients with unilateral nasal masses present with varied nasal symptoms like nasal obstruction, nasal discharge, epistaxis, hyposmia and headache. The extranasal symptoms are commonly facial pain, dental and orbital symptoms. In this study nasal obstruction was the commonest symptom in both the non-neoplastic and neoplastic groups. Epistaxis, and facial pain (dental and orbital complaints) were found to be significantly higher in neoplastic conditions (P value 0.036), hyposmia showing no significant difference, whereas nasal discharge was higher in non-neoplastic conditions.

Table 1. Age distribution patients with unilateral sinonasal mass (N=34)

	Non-neoplastic			Neoplastic		
Age (years)	Male	Female	total	Male	Female	Total
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11-20	9	2	10	1		1
21-30	3	1	4	2	1	3
31-40	1	1	3	2	1	2
41-50	2	2	4	3	1	4
51-60				2	----	2
Total	15	6	21(61.6)	10	3	13(38.4%)

Table 2. Histopathological type

Histopathology	frequency (percentage)
Inflammatory polyp	20 (95.2%)
Inverted papilloma	6 (46.2)
Angiofibroma	1 (7.7%)
Fungal growth	1 (4.8%)
Non-Hodgkin's lymphoma	3 (23.1%)
Adenoid cystic carcinoma	1 (7.7%)
Capillary haemangioma and Pyogenic granuloma	2 (15.3%)
Total	34 (100%)

Table 3. Age vs. Histopathology Crosstabulation

		Histopathology				Total
		Infectious	inflammatory	benign	Malignant	
Age	10-19 years	0	7	0	0	7
	20-29 years	(Fungal)1	5	3	0	9
	30-39 years	0	6	3	1	10
	40-49 years	0	2	1	0	3
	50-59 years	0	0	2	1	3
	60-69 years	0	0	0	2	2
Total		1	20	9	4	34

Chi-Square Tests for p value (0.016)

Table 4. Sex vs. Histopathology Crosstabulation

		Histopathology				Total
		infectious	inflammatory	benign	malignant	
sex	male	1	14	8	3	26
	female	0	6	1	1	8
Total		1	20	9	4	34

Chi-Square Tests for p value (0.671)

Table 5. Distribution of various symptoms

Symptoms	Non neoplastic(n=22)	Neoplastic (n=12)
Nasal obstruction	20 (91%)	9 (80%)
Nasal discharge	15 (68.2%)	0
Hyposmia	10 (45.5%)	4 (40%)
Epistaxis	2 (9%)	4(33.5%)
Facial pain	5 (22.7%)	6(46.7%)

Tritt et al. [12] in his study of unilateral nasal polyposis found epistaxis to be a symptom that has significant association with neoplastic pathology. The use of nasal endoscope represents a significant advance in understanding intranasal anatomy and identification of pathology. Few conditions are typical in their presentation that a diagnostic nasal endoscopy clinches the diagnosis. Multiple polyps are usually a presentation of the ethmoidal polyps whereas an antrachoanal polyp presents as a single polyp arising from the maxillary sinus passing through the sinus ostia and extending backward towards the choana [19]True nasal polyps are subdivided into allergic nasal polyps, showing abundant eosinophils in the stroma in addition to inflammatory cells in a loose edematous stroma (Fig.4 ,5) like most ethmoidal polyps, whereas in the other type viz. inflammatory nasal polyps, there is a paucity of eosinophils like most of antrochoanal polyps. This trend was also seen considering the two forms of the polyps in the present study as thirteen

were antrochoanal and only seven were ethmoidal allergic polyps.

Intranasal lesions of neoplastic conditions may present as typical firm proliferative lesions with destruction of surrounding structures or may mimic inflammatory conditions in their early stages with the presence of polyps on endoscopy [16]. Patients of slow growing conditions like inverted papilloma due to their appearance invariably present with repeated polypectomies done prior to a definitive diagnosis being reached [20].Inverted papillomas are comparatively rare, but this morphological variant is the most commonly encountered lesion of all sinonasal papillomas [22].

The other two morphological forms are exophytic (averted) squamous cell papilloma and cylindric cell papilloma. Inverted papilloma of transitional cell type formed 18% of the unilateral masses, which was closely similar to the findings of Humayun et al. [1] and Bakari et al. [21]. Though it is a benign lesion but clinically it behaves as a potentially notorious pathology if not treated adequately and followed adequately. The rate of malignant transformation may be as high as 11% [23]. Inverted papilloma was associated with squamous cell carcinoma of the sinonasal cavity in 6 (21.4%) of the 28 cases studied by Califano et al. in USA.

Haemangioma is not regularly seen in the nasal cavity, though if it occurs, is predominantly capillary and is found attached to the nasal septum [24]. Cavernous haemangioma is rarely seen in the sinonasal tract [25]. Among the benign lesions, capillary haemangioma and Pyogenic granuloma (15.3%) was seen in our study. This finding corresponds to the observation of Pradhananga et al [26]. A clinicopathological study of haemangioma from Japan reported an unusual origin of capillary type from the nasal septum and of the cavernous variety from the lateral nasal wall [39].

Angiofibroma, is a rare tumor affecting adolescent males, arises from erectile-like fibrovascular stroma in posterolateral wall of roof of nose [22], in our study single unilateral case of angiofibroma has been reported (7.7%) of benign neoplastic group and the patient was male within 2nd decade of life, and this percentage is similar to that obtained by middle east and Indian studies [23].

Malignancy of sinonasal tract is rare [27]. The maxillary sinus is the most common site of origin [28], and the most common malignant histological type is squamous cell carcinoma [29]. Three cases of non-Hodgkin's lymphoma and single case of adenoid cystic carcinoma of mucinous nasal glands, giving an incidence of 30.8% of malignant neoplastic lesions as compared to benign lesions of 59.2%.

Primary nasal lymphoma is a rare disease [30].There is significant variability in the incidence and immunophenotypic characteristics among different geographic areas. Primary nasal lymphoma is rare in western populations, but is more common among Asian populations [31, 32].

The head and neck region is one of the most common sites of extranodal non-Hodgkin's lymphoma, but it is an infrequent tumor at the paranasal sinuses site, representing no more than 5.8–8% of the entire malignant tumors in this localization and 0.3–2% of all extranodal lymphomas [33].

Primary lymphoma of sinonasal or nasopharyngeal area is usually present as a mass in that area, almost always of non-Hodgkin's lymphoma; most patients are elderly but broad age range. Often bulky lesions affecting multiple sinuses and nasal cavity, with extension into nasopharynx. Five year survival is 55% for stage I/II. Most common histopathologic types or variants were (natural killer cell) NK/T cell, diffuse large B cell, peripheral T cell; and mantle cell lymphoma (fig. 6) [34].

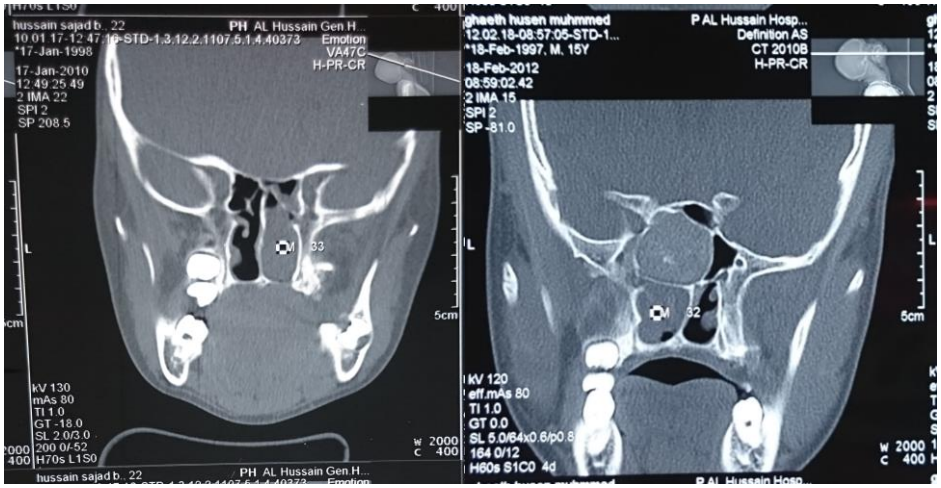

Figure 1&2. Left, CT scan of unilateral nasal inflammatory polp. Right, CT scan of unilateral nasal & paranasal fungal growth.**(**The findings revealed sinus opacity, intrasinus densities and presence of high attenuation areas without bony erosions)

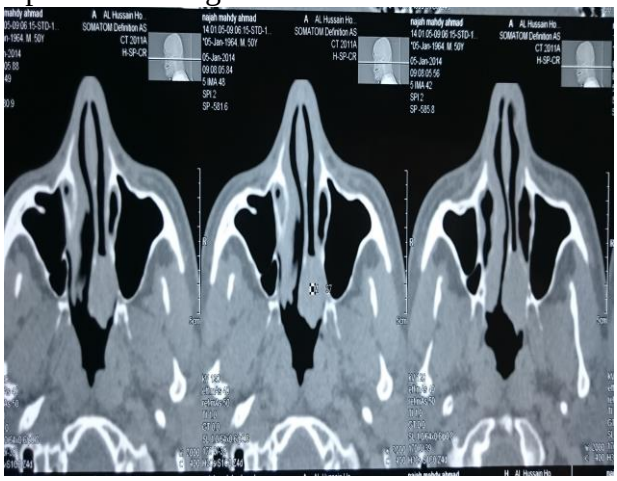

Figure 3. CT scan of unilateral nasal adenoid cystic carcinoma (unilateral sinus opacity with significant boney thinning of the nasal trabecullae with no definite bone erosion seen)

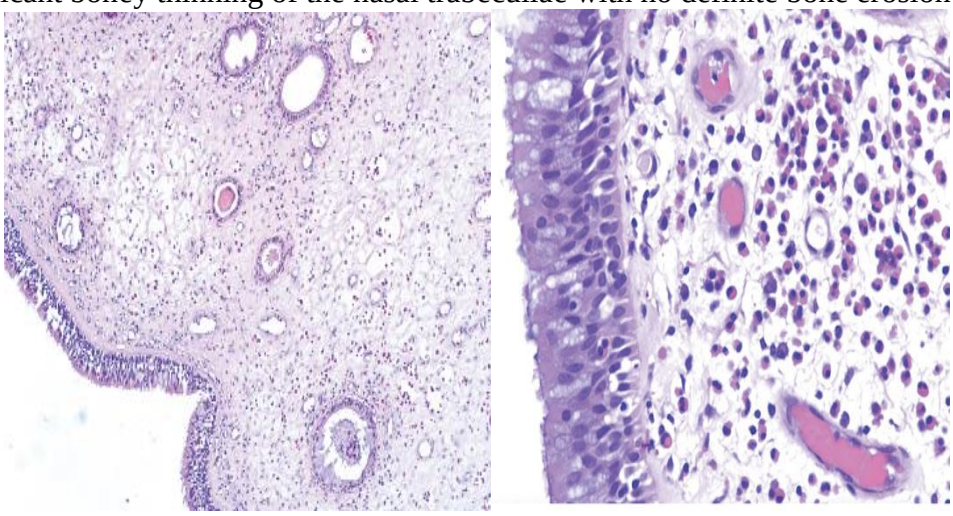

Fig.4&5. Left: inflammatory nasal polyp, loose edematous mumucosa rich in mixed chronic inflammatory cells, congested vessels, and preserved respiratory epithelium(H&E 100x), Right: high power view of nasal polyp showing the eosinophlic infiltrate, loose edematous stroma and congested vasculature with intact respiratory epithelium(H&E 400x).

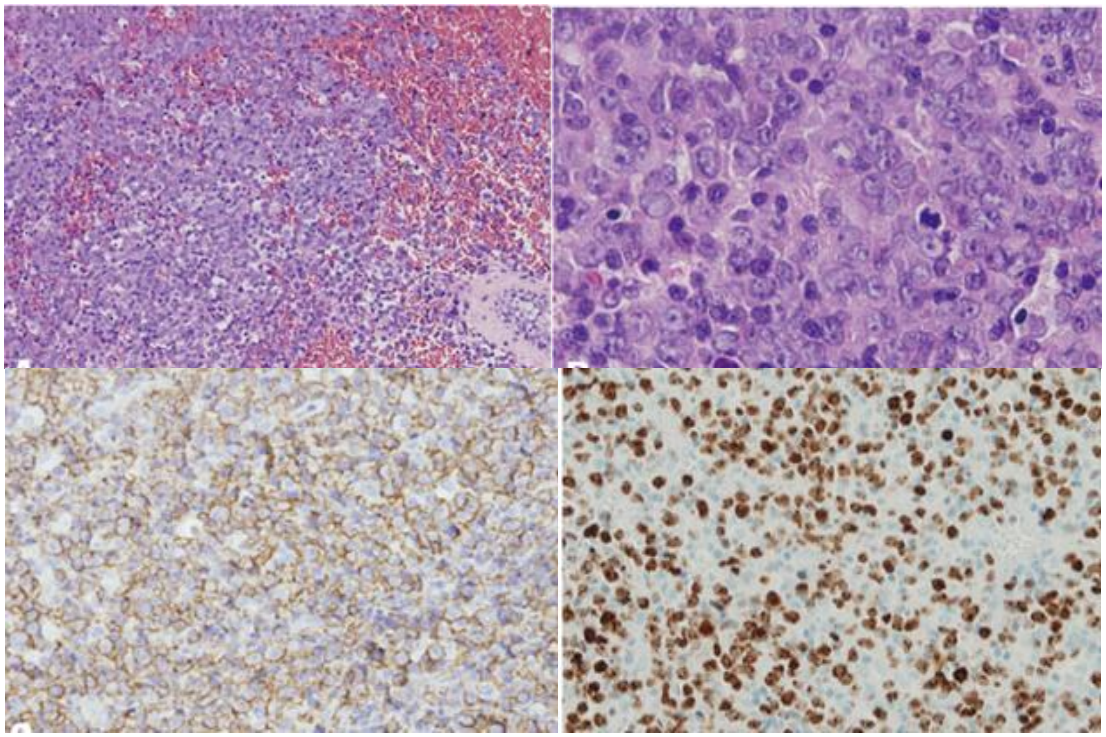

Fig.6. NHL of nasal sinus, Diffuse large cell type .Upper left (H&E, 100x).Upper right (H&E, 400x).Lower left, CD20 positivity in neoplastic cells. Lower right, CD3 positivity in non-neoplastic T cells

Nasal lymphoma with natural killer (NK) or T-cell phenotype is more common in Far East Asian countries (Japan, Korea, Taiwan, and China) and also in Mexico and South America. On the other hand, nasal lymphoma with B-cell phenotype is typically more common in Western populations [31, 35.36.33] the most common presentations are epistaxis, nasal obstruction, and nasal swelling. Less commonly, proptosis or hard palate perforation is observed. [33, 36], in our study all of the isolated cases were of diffuse large B cell type, documented by immunophenotyping for CD3, 5 and 20.

The affected age group 37 - 60 years. And this study was agreed with that obtained by Polish et.al [37]. All the tumors originated in the maxillary sinus, eroding the lateral wall of nasal cavity.

The other rare malignant tumor was adenoid cystic carcinoma which can be regarded as a case report in nasal cavity (fig.3); adenoid cystic carcinomas are common in minor salivary glands, uncommon in parotids and rare in nose and paranasal sinuses. In nose mostly presented with mass or epistaxis, in our study it was diagnosed in 50 years male with unilateral obstructing nasal mass, this figure goes with case reports by V. phaniedra et al [38].

Histopathologic examination is conclusive and essential in diagnosing the polypoidal lesions, describing both etiology and cellular details. It is the only means for determining the nature of the disease i.e., inflammatory or neoplastic. Radiologic investigations are also very helpful in understanding the nature or the type of the pathology, extension of the pathology and associated sinus lesions. Surgery is the appropriate treatment for non-neoplastic and benign neoplastic lesions while malignant lesions require wide surgical excision followed by radio or chemotherapy alone or in combination. Regular follow up is required for early detection of recurrence or metastasis [39]. The outcome depends on the type of malignancy and the how early is diagnosed, which usually poor in non-Hodgkin's lymphoma and favorable in

adenoid cystic carcinoma as the latter is a low grade slowly growing tumor.

Conclusion

Sinonasal masses have various differential diagnoses that otolaryngologists have to diagnose and treat. Malignancy should be distinguished from non-malignant lesions. Benign conditions show a peak during second to fifth decade of life, while malignancy is generally observed only after the 4th decade.

Polyps are the most common benign lesion, while in contrary to others, non-Hodgkin's lymphoma is predominate in our study.

Nasal obstruction is the most common symptom while epistaxis and extra nasal symptoms like facial pain, dental and orbital complaints were found to be higher in the neoplastic conditions.

Although nasal endoscopy with biopsy remains the gold standard for diagnosis, but; the presence of extensive soft tissue involvement and bony destruction on CT scan should raise the suspicion of a possible neoplastic lesion.

The clinician must have a high index of suspicion to rule out a neoplastic etiology in all cases of unilateral nasal mass, as neoplastic lesions have significant unilateral preponderance.

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