Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 01, 2024

"HISTOPATHOLOGICAL STUDY OF TONSILLAR LESIONS"

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ABSTRACT

Background: The palatine tonsils are paired nodular masses of lymphoid tissue situated on either side of the oropharynx. Despite their protective function, they are prone to infections. The present study aimed to analyse the various histopathological findings in tonsillar lesions.

Material and method Histopathological findings of 180 cases were studied along with analysis of distribution of the lesions. The data collected was retrospective (July 2015 to October 2018) as well as prospective (November 2018 to June 2020) over a span of 5 years. Both tonsillectomy and tonsillar biopsies were included. The data was represented in the form of percentage and frequency.

Results: The present study included 180 cases of tonsillar lesions. Histopathological evaluation revealed 158 (87.78%) inflammatory lesions, 13 (7.22%) benign lesions and 9 (5%) malignant lesions. Chronic tonsillitis was the commonest lesion. The benign lesions included cartilaginous choristoma, epidermal inclusion cyst, lymphangiomatous polyp and inflammatory myofibroblastic tumour. Among malignant lesions, squamous cell carcinoma was the most frequent tumour in 7 (3.88%) cases. We found 2 cases (1.11%) of follicular dendritic cell sarcoma. 157 patients presented with throat pain (87.22%), accompanied by odynophagia in 163 cases (90.56%), whereas fever in 16 cases (5.55%). All the patients showed enlarged, congested tonsils with congestion of anterior pillars and peritonsillar region.

Conclusion: Study documented with Non neoplastic lesions of the tonsil surpassed the neoplastic lesions. Chronic tonsillitis was the most common histopathological diagnosis. Most of the tonsillar lesions present with similar clinical features hence histopathology remains the gold standard method for diagnosis.

Key words: Tonsillitis, Tonsillectomy, Histopathology, Tonsil, Carcinoma.

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Introduction:

Palatine tonsils are paired masses of lymphoid tissue, which act as an immunologic barrier against the entry of pathogens into respiratory tract.[1,2] They are covered by non-keratinising squamous epithelium which extends to deep crypts that penetrate each tonsil.[3] Tonsillitis is one of the commonest infectious diseases in the young age group. Tonsillectomy is usually performed for indications like recurrent infections, peritonsillar abscess.[4] Other indications include obstructive sleep apnoea, tonsiloliths, tonsillar cysts and malignancies. Present study aimed to analyse the various histopathological lesions of tonsils in the present institute.

Material and methods

Histopathological findings of 180 cases were studied along with analysis of distribution of the lesions. The data collected was retrospective (July 2015 to October 2018) as well as prospective (November 2018 to June 2020) for a period of 5 years. Both tonsillectomy and tonsillar biopsies were included. For prospective study, the specimens were fixed in 10% buffered formalin, measured, weighed and oriented. Detailed gross examination was carried out, photographs of the specimen taken and required sections were taken. Tumor particulars were noted with respect to size, surface, margins and extension. The tissue was processed as per the standard procedure 4–5-micron sections were cut on a microtome and stained by Haematoxylin and eosin stain. A detailed microscopic examination was performed. For retrospective study, the histopathological reports and clinical details were collected. Corresponding slides were collected and reviewed for confirmation of diagnosis.

Statistical analysis: All the collected data were entered in excel sheet and analysed using SPSS 27.0. the data were summarised as mean, standard deviation, frequency and percentage. For all statistical purpose, a p-value of <0.05 was considered statistically significant.

RESULTS

Total 180 cases were received, out of which 169 tonsillectomies and 11 were biopsies. The age of the patients ranged from 4-80 years. The mean age of presentation was 18 years. Majority of the cases were seen in the 1st and 2nd decade of life. There were 44 cases (24.44%) occurring in the 1st decade, 92 cases (51.11%) in the 2nd decade. Out of total 180 cases, 107 were females (59.44%) and 73 were males (40.56%). Thus, there was a female preponderance with male: female ratio being 1: 1.46 (Table 1)

Table – 1. Distribution of cases according to Age and Sex (Years)

Age Group (years)	No. of cases	Male		Female	
		No.	%	No.	%
0-10	44	15	8.33%	29	16.11%
11-20	92	43	23.89%	49	27.22%

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21-30	25	06	3.33%	19	10.56%
31-40	09	03	1.67%	06	3.33%
41-50	02	01	0.56%	01	0.56%
51-60	02	01	0.56%	01	0.56%
61-70	04	02	1.11%	02	1.11%
71-80	02	02	1.11%	0	0%
Total	180	73	40.56%	107	59.44%

Table 2. Clinical presentation of tonsillar lesions.

Clinical feature(s)	No.of cases	Percentage
Throat Pain	157	87.22%
Odynophagia	163	90.56%
Congestion	180	100%
Cheesy material in crypts	8	4.44%
Enlarged tonsils	180	100%
Fever	16	8.89%
Halitosis	3	1.67%
Palpable jugulodiagastric lymph nodes	13	7.22%

All the patients showed enlarged, congested tonsils with congestion of anterior pillars and peritonsillar region.157 patients presented with throat pain (87.22%), accompanied by odynophagia in 163 cases (90.56%), fever in 16 cases (5.55%), (Table 2)

Table 3. Histopathological spectrum of tonsillar lesions

Inflammatory lesions (158 cases- 87.78%)		
	No of cases	%
Chronic tonsillitis	142	78.88%

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Reactive lymphoid hyperplasia	1	0.5 %
Acute on chronic nonspecific Tonsillitis	15	8.33 %
Benign lesions (13 cases - 7.22%)		
	No.of cases	Percentage
Cartilaginous choristoma	7	3.88 %
Epidermal cyst	4	2.22 %
Lymphangiomatous polyp	1	0.5 %
Inflammatory myofibroblastic tumour	1	0.5%
Malignant lesions (9 cases - 5.00%)		
	No. of cases	Percentage
Squamous cell carcinoma	7	3.88%
Follicular dendritic cell sarcoma	2	1.11%

Tonsillar lesions were divided into three broad categories viz. inflammatory, benign and malignant lesions. Majority of the lesions were inflammatory followed by benign lesions. Malignant lesions were few.

Chronic tonsillitis:

In our study, the most common lesion encountered is chronic nonspecific tonsillitis in 142 cases (78.33%). Out of 142 cases, 54 were male and 88 were female with male to female ratio being 1:1.16. Patients presented with throat pain, odynophagia and fever.

Grossly, external surface showed congestion and cut surface showed grey tan appearance with focal haemorrhage (Fig. 1a). Microscopically, the surface epithelium showed moderate lymphocyte infiltration. The subepithelium shows hyperplastic lymphoid follicles with prominent germinal centres separated by fibrovascular septae (fig 1b).

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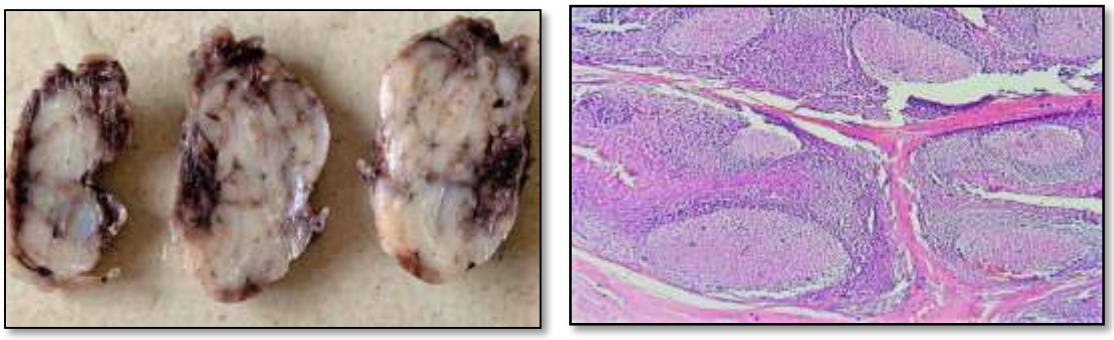

*Figure 1: 1a. Gross photograph of cut surface of chronic nonspecific tonsillitis showing grey tan appearance with focal haemorrhage. 1b. Microphotograph of chronic tonsillitis showing hyperplastic lymphoid follicles with prominent germinal centres (**H&E, x4)***

Acute tonsillitis:

There were 15 cases of acute tonsillitis reported in the present study. Microscopic examination of acute tonsillitis showed tonsils lined by stratified squamous epithelium. The subepithelium shows hyperplastic lymphoid follicles with prominent germinal centers. The crypts show infiltration by polymorphs and few mononuclear cells.

Reactive lymphoid hyperplasia:

Single case of reactive lymphoid hyperplasia was noted. Microscopic examination showed tonsils lined by stratified squamous epithelium. The subepithelial tissue showed hyperplastic lymphoid follicles with prominent germinal centers.

Cartilaginous choristoma:

Cartilaginous choristoma was recorded in seven cases (3.88%) in our study. Out of which 6 cases were associated with chronic nonspecific tonsillitis and single case was associated with acute tonsillitis. Out of seven cases five were female and two were male. The age of diagnosis ranging from 10 – 20 years. In all our cases, a focus of mature cartilage was seen without calcification (fig. 2)

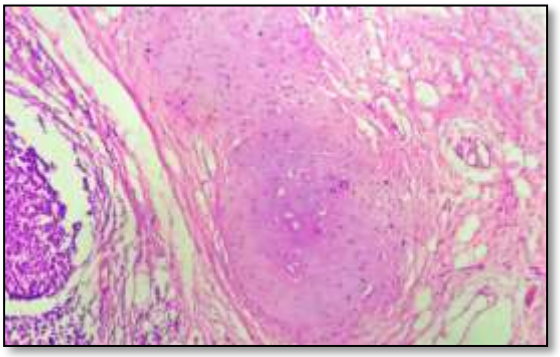

Figure 2: Cartilaginous choristoma showing mature hyaline cartilage composed of chondrocytes. (H&E, x10)

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Epidermal inclusion cyst:

In this study, four cases of epidermal inclusion cyst were reported. Histopathologically, in three of our cases, the tonsils showed evidence of focal lymphoid hyperplasia along with a cyst lined by stratified squamous epithelium containing keratin flakes (fig .3).

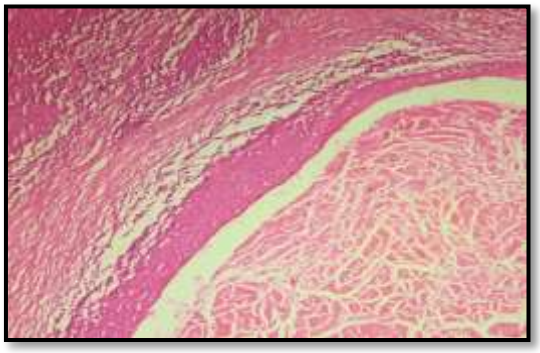

Figure 3: Epidermal inclusion cyst lined by squamous epithelium (H&E,x10)

Lymphangiomatous polyp:

A single case of lymphangiomatous polyp was reported in this study. The patient was 19 years male presented with mass in pharynx. Grossly tonsil showed a polypoidal mass with smooth external surface and cut surface showed grey tan appearance. (Fig.4a,4b) Microscopic examination showed tonsil with a mass lined by keratinised stratified squamous epithelium and composed of variably sized vascular lymphatic channels lined by endothelium and separated by fibrous septae.(Fig.5a,5b)

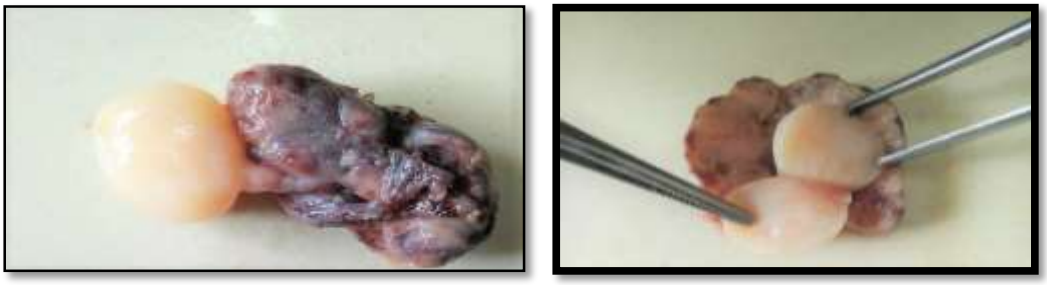

Figure 4: 4a. Gross photograph of tonsillectomy specimen showing pedunculated polyp with smooth surface. 4b. Cut surface of the polyp showed homogenous gray tan appearance

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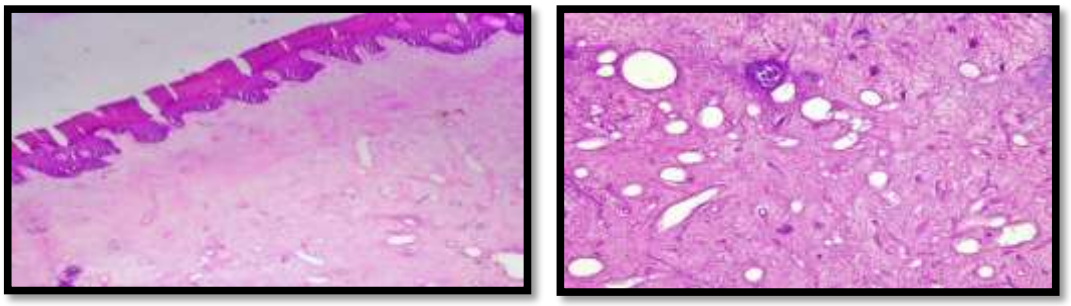

Figure 5: 5a. Lymphangiomatous polyp lined by squamous epithelium (H&E, x4); 5b. Lymphangiomatous polyp composed of dilated lymphatic channels and lymphoid tissue. (H&E,x10)

Inflammatory myofibroblastic tumour:

In our study, we had a case of inflammatory myofibroblastic tumour. A 25-year-old man had presented with tonsillar mass. Histologically, IMTs are composed of myofibroblasts and inflammatory cells like lymphocytes, plasma cells, eosinophils and macrophages. Amongst malignant lesion, in our study, we found seven cases of SCC and two cases of follicular dendritic cell sarcoma.

Squamous cell carcinoma:

Five out of seven cases of SCC were seen in elderly patients with a male preponderance. All cases showed similar gross and histolopathological features. Gross features were nodular light brown to dark brown tissue pieces. Microscopic examination showed a tumour composed of round to polyhedral cells having pleomorphic hyperchromatic nuclei and moderate amount of eosinophilic cytoplasm arranged in sheets. Individual cell keratinization and many keratin pearls were noted. (Fig.6)

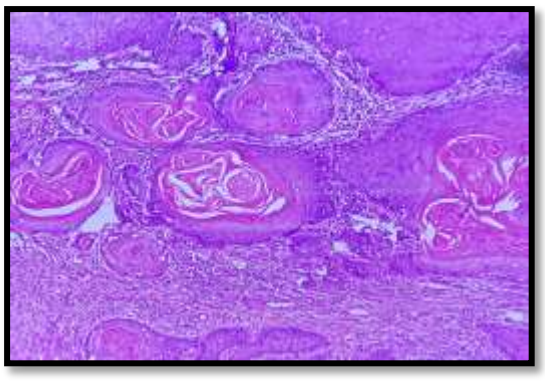

Figure 6: Squamous cell carcinoma showing large polygonal cells with hyperchromatic nucleus arranged in sheets with numerous keratin pearls. (H&E,x10)

Follicular dendritic cell sarcoma:

We reported two cases of follicular dendritic cell sarcoma. Both cases presented as tonsillar growth in 35 yrs of age, with a painless non-ulcerated enlarged right tonsil. Grossly, we

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received irregular pieces of light brown tissue. Microscopy showed tonsil replaced by a tumour composed of round to oval to spindle shaped cells having ovoid nuclei with clear to granular chromatin, wrinkled nuclear membrane and indistinct cell margins arranged in sheets and fascicles. Perivascular infiltration and areas of necrosis were noted (Fig 7a, 7b). Immunohistochemically, the cells were positive for CD 21, CD23 and CD35 and negative for CD3, CD10, CD20, CD30, anaplastic lymphoma kinase, and B-cell lymphoma 6. (Fig 8)

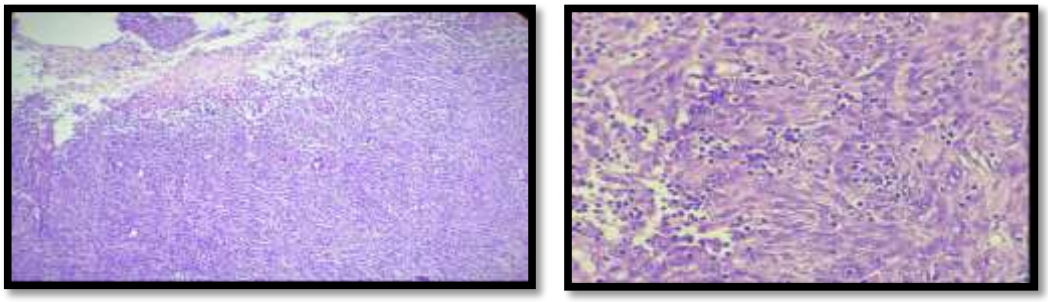

Figure 7: 7a. Follicular dendritic cell sarcoma showing neoplastic cells having characteristic storiform pattern (H&E,x4); 7b. Follicular dendritic cell sarcoma showing neoplastic cells having oval to spindle cells with delicate nuclear membranes and vesicular to granular finely dispersed chromatin with lymphocytic sprinkling (H&E,x40)

Figure 8: Immunohistochemical staining of follicular dendritic cells showing positivity for CD 21, CD 23 and CD 35 markers

Discussion

Chronic inflammation in palatine tonsils is clinically characterised by repeated episodes of tonsillitis, therefore is called recurrent tonsillitis (RT). Serdar Ugras et al.,[5] put forth eight histopathological criteria for diagnosis of chronic tonsillitis: 1) Presence of moderate lymphocyte infiltration in the surface epithelium, 2) Presence of abscess leading to the defect in the surface epithelium (Ugras's abscess), 3) Presence of diffuse lymphocyte infiltration leading to the defect in the surface epithelium, 4) Polymorphonuclear leukocytes in the surface epithelium and in the sub-epithelial region, 5) lymphoid hyperplasia, 6) Increase in the number of plasma cells in the sub epithelial region and in the interfollicular area, 7) fibrosis and or atrophy. Seven out of eight criteria studied are more closely associated with chronic tonsillitis, only one criteria (the presence of lymphoid hyperplasia) is higher in

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chronic tonsillar hypertrophy.[5] The frequency of chronic nonspecific tonsillitis similar to the study done by Adoga R et al.,[6] and Sushna M et al.[7]

Acute tonsillitis has traditionally been associated with Streptococcus pyogenes infection,[8] others like, Neisseria gonorrhoeae, Chlamydia pneumoniae and Mycoplasma pneumoniae have been considered as facultative pathogens and account for only 0.5 to 2.5% of cases each.[9] As almost 30– 50% of cases have a viral origin, the remaining seem to account for cases of unknown etiology.[10,11] Histopathological examination show tonsils lined by stratified squamous epithelium. The subepithelium shows hyperplastic lymphoid follicles with prominent germinal centers. The crypts show infiltration by polymorphs.

Cartilaginous choristoma was first described by Berry in1890.[12] Mature cartilage is not a normal constituent of nasopharyngeal epithelium and therefore presence of cartilage in tonsil represents a choristoma. Histopathologically, it is characterised by the diffuse deposits of calcium and scattered cartilaginous cells in various stages of maturation in single or clustered cartilaginous foci. Most cases occur in adults but may occur at all ages. > 70% of osseous and cartilaginous choristomas occur in females.[13] The differential diagnosis includes benign conditions like chondroma, papilloma and malignant cartilaginous neoplasms like chondrosarcomas that can be ruled out by histopathological examination.

Epidermal inclusion cyst is also called as epidermal cyst, epithelial cyst, keratin cyst, or epidermoid cyst.[14] The inclusion cysts can be found in areas where embryonic elements fuse together (congenital) or can be acquired (post-traumatic). Histopathologically, cyst is lined by stratified squamous epithelium with granular layer and filled with lamellated keratin material. Can be associated with hereditary syndromes like Gardner syndrome and basal cell nevus syndrome. It can mimic lesions like dermoid cyst and lymphoepithelial cyst.[15,16]

Lymphangiomatous polyp is a rare congenital vascular hamartomatous malformation of tonsil.[17] Although present at or around the time of birth, it usually manifests in first two decades of life.[18,19] Pathogenesis is uncertain and theories proposed to explain 1) Failure of the primordial sac drain into the veins, 2) Abnormal sequestration of lymphatic tissue 3) Abnormal budding of the lymphatics

Clinically it may simulate tonsillar hypertrophy and various benign and malignant neoplasms. The World Health Organization classification currently defines IMT as an intermediate soft-tissue tumour comprising spindle cells that exhibit myofibroblast differentiation and numerous inflammatory cells, plasma cells, and/or lymphocytes.[20,21] The clinical presentation and gross pathologic features of IMT may mimic a malignancy. Histologically, it is composed of myofibroblasts and inflammatory cells like lymphocytes, plasma cells, macrophages and eosinophils in varying proportions.

The IMT differential diagnosis are solitary fibrous tumour, lymphoma, follicular dendritic cell sarcoma etc. Lu ZJ et al.,[22] reported six cases of tonsillar IMT. Coffin et al.,[23] recognized three basic histologic patterns of extra pulmonary IMT: Nodular fasciitis-like (showing myxoid, vascular areas, and inflammatory cells); Fibrous histiocytoma-like

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 01, 2024

(showing compact spindle cells with intermingled inflammatory cells); and Desmoid or scar-like (showing dense plate-like collagen).

Advanced stage is seen in two- thirds of the patients with tonsillar carcinomas, because early lesions are generally asymptomatic.[24] Carcinoma arising from these sites usually is squamous in origin and is related strongly to smoking, HPV infection and, to a lesser degree, alcohol ingestion; commonly affecting in 5th to 7th decade with incidence greater in men. Squamous cell carcinoma (SCC) is the most common malignancy followed by Non Hodgkins lymphoma.[25] It may present as oropharyngeal bleeding, dysphagia, persistent halitosis, tonsillar asymmetry. Morphologically, it is characterised by proliferation of atypical, often pleomorphic cells. Well differentiated SCC are usually associated with keratin production and the presence of intercellular bridges between adjacent cells.

Rare malignant tumor, Follicular dendritic cell sarcoma (FDCS) is recognized in recent years. It is also known as dendritic reticulum cell sarcoma, is a neoplasm of reticular dendritic origin. Monda et al., first described the condition in 1986.[26] Extranodal FDCS of the head and neck occurs principally in the tonsils. Microscopically, oval to spindled cells with dispersed chromatin, small nucleoli, eosinophilic and fibrillar cytoplasm with syncytial borders arranged in fascicles and storiform pattern. Intertumour sprinkling of lymphocytes is seen. IHC needed for confirmation. The frequency of percentage of malignant lesions in present study is 5% which is comparable with studies done by Courville EL et al.,[27] and Sushna M et al.[7] The differential diagnosis for FDCS includes large cell lymphoma, malignant melanoma, metastatic carcinoma, malignant fibrous histiocytoma etc.

Conclusion

There is presence of a wide variety of histopathological lesions of the tonsil. Non neoplastic lesions of the tonsil outnumbered the neoplastic lesions. Chronic tonsillitis was the most common histopathological diagnosis with commonest suffering group being female children. Squamous cell carcinoma was the frequently encountered malignant lesion. As the neoplastic as well as nonneoplastic lesions presented with similar clinical findings, histopathology remains the gold standard method for diagnosis. Hence, all tonsillar specimens should be subjected for histopathology.

Funding: Nil

Conflict of interest: One case of Follicular dendritic cell sarcoma tonsil has already been published in Malaysian Journal of Pathology 2015.

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