Lymphocytic tumours of the conjunctiva

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SYNOPSIS Twenty-six cases of lymphocytic tumour of the conjunctiva, which were originally classified as benign lymphoma and lymphosarcoma, were followed up for more than five years. They were then reclassified into non-disseminating and disseminating groups. Only when germinal follicles are present can a histological diagnosis of benign lymphoma be made. Moreover, it is only when lymphoblasts are seen to be infiltrating the tissues that a definitive diagnosis of lymphosarcoma can be made. The remaining tumours, which represent the large majority of lesions, show a very similar or identical histological picture, and a diagnosis of benignity or malignancy can only be made after a prolonged follow up. The possible nature of the non-disseminating lymphocytic tumours is briefly discussed.

Lymphocytic tumours of the conjunctiva are usually classified as lymphoma or benign lymphoma, lymphosarcoma, or lymphatic leukaemic deposits. With the exception of the latter, which in most cases can be readily diagnosed haematologically, this classification presents some difficulties because the histological diagnosis on initial biopsy is sometimes belied by the subsequent clinical course. Thus a tumour diagnosed 'benign' may later disseminate and conversely a 'malignant' tumour may not. Either the original diagnosis was in error or there is no sharp histological distinction between benignity and malignancy in this group of tumours.

In order to examine these difficulties and to determine to what extent histological features can be correlated with the subsequent clinical course, I carried out a long-term follow-up of these cases of lymphocytic tumour of the conjunctiva (excluding leukaemic deposits). On the record of their clinical behaviour for a period of more than five years, they were reclassified into non-disseminating and disseminating tumours and the original clinical and histological features reviewed retrospectively in order to discover any features that might have pointed to their subsequent course.

Examples of 'benign lymphoma' have been recorded by many authors. Hochheim (1900) described a woman of 79 years with bilateral tumours. Other cases have been recorded by van Duyse (1905) who was the first worker to treat the lesions by irradiation, Baslini (1907), Cosmettatos (1910), and Coats

(1915) who described five cases affecting young people. The tumours recorded by Coats were slowly growing and were situated at the inner portion of the conjunctiva, three affecting the plica, one the caruncle, and the fifth affecting the limbus. The lesions were bilateral and symmetrical in one case. Bedell (1922) described the first case in America, and other cases have been described by Speciale-Piccichè (1927), Saradarian (1940), Ayoub (1948), Svoboda (1948), Magni (1949), King and Ashton (1949), Blaxter (1955), Friedman, Borrelli, and Geleris (1955), Charamis (1957), Valvo (1959), Scuderi and Cardia (1959), Lerman (1960), Trzcińska-Dąbrowska (1963), Fronimopoulos, Kofinas, and Lambrou (1964), and Buiuc, Cordun, Beşchea, Popovici, and Rinea (1966).

Examples of 'lymphosarcoma' of the conjunctiva have been recorded by Vollaro (1899), Werner (1904), Fergus (1905), Goldzieher (1907), and Teulière (1910) who described a lesion near the caruncle which was associated with cervical lymphadenopathy; Coats (1915), Casolino (1916), Bedell (1922), Shannon and McAndrews (1932), Ennema (1935), Heath (1949), Roveda (1949), Heritier and Wachtel (1951), Capalbi (1951), Cometta (1952), Junghannes (1953), Schardt (1956), Offret and Rouher (1956), Hilaris, Katrakis, and Karapatakis (1959), Chatterjee (1959), Vancea, Lazarescu, Cerne, and Vaighel (1959), Lerman (1960), and Theodore (1960) who described a patient with lymphosarcoma of the stomach who developed lesions of both conjunctivae several years later; and by Bernardi, Martuzzi, and Palmieri (1963). The

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Fig. 1 Clinical photograph of the eye, showing a fleshy lymphocytic tumour of the conjunctiva.

conjunctival lesions may precede, succeed, or be concomitant with lesions elsewhere in the body.

Clinically, lymphocytic tumours of the conjunctiva are typically small, firm, salmon pink-coloured, fleshy, slowly growing, and painless lesions that can be found anywhere in the conjunctiva and may extend onto the cornea or into the orbit. The lesions may be bilateral, occasionally multiple, and usually have a sharply demarcated border, the tumour tending to mould itself to the contour of the surrounding structures (Fig. 1).

The usual histological appearances are of a sheet of lymphocytes lying in a delicate fibrovascular stroma (Fig. 2) usually with occasional plasma cells (Fig. 3) and reticulum cells. Germinal follicles (Fig. 4) are a feature of some cases, and foci of reticulum cells (Fig. 5), multilobulated reticulum cells (Fig. 6), Russell bodies (Fig. 7), epithelioid cells (Fig. 8), and mitotic figures and fibrosis (Fig. 9) may be seen in other tumours. Lymphoblasts may be seen infiltrating the conjunctival tissues (Fig. 10) in some cases.

Material

Twenty-six cases of lymphocytic tumour of the conjunctiva were studied and followed up for more than five years (Table I). The lesions were classified into benign lymphoma and lymphosarcoma and at the end of five years were classified again into non-disseminating and disseminating lymphocytic tumours. The clinical and histological features were then reviewed in retrospect in order to see whether or not there were any features that might have indicated the final outcome.

Fig. 2 Lymphocytic tumour of the conjunctiva, composed of a sheet of lymphocytes and occasional reticulum cells. *H and E* $\times 590$.

Results

Of the 26 cases followed up, the initial diagnosis was benign lymphoma in 18 cases and lymphosarcoma in eight cases (Table II). The final diagnosis in the group of benign lymphomas was 16 non-disseminating tumours and two disseminating tumours. Of the eight cases diagnosed as lymphosarcoma, four disseminated and four did not (Table III). A review of the clinical and histological features of the two cases diagnosed initially as benign lymphoma (cases 14 and 23) and later disseminated as lymphosarcomas is shown in Table IV. A benign lymphoma (case 4) which did not disseminate is included for comparison. It will be seen that there were no clinical or histological changes which might have suggested that these two tumours would have disseminated as lymphosarcomas. Both cases showed histological features that were similar or identical with case 4 which did not disseminate, the patient being alive and well 16 years after the onset. Both tumours (cases 14 and 23) showed a sheet of lymphocytes with occasional reticulum cells (Fig. 11).

Fig. 3 *Lymphocytic tumour of the conjunctiva, showing plasma cells near the centre of the field. H and E × 590.*

Fig. 4 *Lymphocytic tumour of the conjunctiva, showing a germinal follicle. H and E × 130.*

Fig. 5 *Lymphocytic tumour of the conjunctiva, showing a focus of reticulum cells. H and E × 590.*

Fig. 6 *Lymphocytic tumour of the conjunctiva, showing two multilobulated reticulum cells (arrows). H and E × 590.*

Fig. 7 *Lymphocytic tumour of the conjunctiva, showing a Russell body near the centre of the field (arrow). H and E $\times$ 590.*

Fig. 8 *Lymphocytic tumour of the conjunctiva, showing a focus of epithelioid cells centrally. H and E $\times$ 130.*

Fig. 9 *Lymphocytic tumour of the conjunctiva, showing fibrosis. H and E $\times$ 130.*

Fig. 10 *Lymphocytic tumour (lymphosarcoma) of the conjunctiva, showing many lymphoblasts. H and E $\times$ 590.*

Case	Age	Sex	Site	Relevant Clinical Features	Gross Appearance	Histopathology	Primary Treatment	Recurrence	Follow Up
1	32	M	Inner canthus (L eye)	Bilateral lesions for 12 months, blood count, ESR, and WR normal	Localized raised mass	A sheet of lymphocytes with occasional reticulum cells	Excision	No	Alive and well with no lesions 18 years after onset
2	49	F	Lower fornix (L eye)	Recent onset Similar lesion excised from R conjunctiva 2 years previously	Localized raised mass	A sheet of lymphocytes with well defined follicles of reticulum cells, epithelium infiltrated	Biopsy	Two years after biopsy recurrence excised	Alive and well with no lesions 15 years after onset
3	63	F	Fornices caruncle (R eye)	Present 1 month Blood count normal	Soft, pink, raised mass	A sheet of lymphocytes with occasional reticulum cells	Biopsy	No	Died 11 years after onset from coronary occlusion. No tumour present
4	46	F	Lower fornix inner canthus palpebral (R eye)	Present 2 years, gradual increase in size	Widespread raised pinkish tumour	A sheet of lymphocytes with a few plasma cells and reticulum cells, some of the latter being multilobulated	Biopsy and irradiation (300 r)	No	Alive and well without symptoms 16 years after onset
5	69	F	Upper fornix (L eye)	Present 1 month with ptosis and chemosis, blood count normal	Localized mass	A sheet of lymphocytes and occasional reticulum cells	Biopsy	Two years and three years after onset; second recurrence involved orbit	First recurrence excised and second irradiated (2900 r in 3-weeks); patient alive and well 11 years after onset without symptoms
6	46	F	Bulb (R eye)	Present 6 months, blood count normal	Localized nodular mass	A sheet of lymphocytes, and a few plasma cells, eosinophils, and reticulum cells	Biopsy	No	Died 5 years after onset from pneumonia; no tumour present
7	54	F	Lower fornix (L eye)	Present 1 month, gradual increase in size, blood count normal	Localized raised mass	A sheet of lymphocytes and an occasional reticulum cell; epithelium infiltrated	Biopsy and irradiation	No	Alive and well 12 years after onset; no evidence of tumour
8	57	F	Palpebral (R eye)	Present 9 months, gradual increase in size, blood count and ESR normal	Localized raised mass	A sheet of lymphocytes and occasional plasma cells	Excision and irradiation	No	Died 4½ years after onset from cardiac failure and malignant hypertension; no tumour present
9	55	F	Bulb (R eye)	Present 12 months, recent increase in size, blood count normal	Raised mass	A sheet of lymphocytes	Excision	No	Alive and well 6 years after onset; no tumour present
10	25	M	Inner canthus (R eye)	Present 3 months, blood count normal	Localized raised mass	A sheet of lymphocytes and occasional plasma cells; a focus of epithelioid cells present	Excision	No	Alive and well 8 years after onset; no tumour present
11	50	F	Bulb (L eye)	Present 4 years and excised elsewhere, recurred and gradual increase in size	Localized papillary mass	A sheet of lymphocytes with occasional plasma cells and reticulum cells; marked stromal fibrosis	Excision	4 years after onset	Alive and well 10 years after onset; no tumour present

Table I Clinico-pathological features, primary treatment, and follow up cases studied

Case	Age	Sex	Site	Relevant Clinical Features	Gross Appearance	Histopathology	Primary Treatment	Recurrence	Follow Up
12	58	M	Palpebral (L eye)	Recent onset; tonsillectomy followed by irradiation	Localized raised mass	A sheet of lymphoblasts and lymphocytes, predominantly the former; an occasional reticulum cell and mitoses seen	Biopsy and irradiation	No	Died 1 year after onset with widespread metastases
13	54	M	Bulb (R eye)	Present 3 months; blood count normal	Localized raised mass	A sheet of lymphocytes and a few plasma cells and multilobulated reticulum cells; epithelium and lymphatic vessels infiltrated	Biopsy and irradiation	No	Died 5½ years after onset from a coronary thrombosis; no tumour present
14	47	M	Fornices (L eye)	Recent onset; Similar lesion in other eye treated by irradiation (1500 r in 32 days); blood count normal	Localized nodular mass	A sheet of lymphocytes and occasional reticulum cells, plasma cells and eosinophils; a focus of reticulum cells and a few multilobulated reticulum cells present	Biopsy and irradiation (1500 r in 32 days)	34 months after onset	Twenty-two months after onset, enlarged lymph nodes in neck and groin irradiated. Died 5 years after onset with generalized lymphosarcoma
15	38	M	Fornix (R eye)	Present 6 months; gradual increase in size; blood count normal; similar lesion in other eye	Widespread papillary lesion	A sheet of lymphocytes with occasional reticulum cells, eosinophils, and mitoses	Biopsy and irradiation (3150 r in 38 days)	No	Alive and well 7 years after onset; no tumour present
16	26	M	Bulb (R eye)	Present 8 years; gradual increase in size; blood count normal	Localized flat lesion	A sheet of lymphocytes with occasional ill-defined foci of reticulum cells; epithelium infiltrated	Excision	Nil	Alive and well 13 years after onset; no tumour present
17	85	F	Caruncle (R eye)	Present 2 months; blood count normal	Localized raised lesion	A sheet of lymphocytes with a few reticulum cells and a few foci of reticulum cells	Excision	Nil	Died 4 years after onset with congestive cardiac failure; no tumour present
18	57	M	Fornices (L eye)	Recent onset; gradual increase in size; blood count normal; ESR raised to 34 mm/hour (Wintrobe); similar lesion in R eye treated by irradiation; cervical lymphadenopathy L side for 2 years and irradiated; mediastinal lymphadenopathy and R pleural effusion for 1 year, biopsy of lymph node showed lymphosarcoma	Localized raised lesion	A sheet of lymphocytes with a few reticulum cells and mitoses	Biopsy	Nil	Died 1 year after onset of conjunctival lesions and 3 years after cervical lymphadenopathy from congestive cardiac failure; no conjunctival tumours present
19	65	M	Bulb (L eye)	Present for 18 months	Localized raised lesion	A sheet of lymphocytes and occasional reticulum cells	Excision	Nil	Died 8 years after onset, with nephritis; no tumour present

Table I Clinico-pathological features, primary treatment, and follow up cases studied—continued

Case	Age	Sex	Site	Relevant Clinical Features	Gross Appearance	Histopathology	Primary Treatment	Recurrence	Follow Up
20	69	M	Lower fornix (R eye)	Recent onset; blood count and ESR normal	Localized raised mass	A sheet of lymphocytes with ill-defined germinal follicles and occasional plasma cells and reticulum cells	Biopsy	Nil	Alive and well 7 years after onset; no tumour present
21	62	M	Lower fornix (L eye)	Recent onset of lesions of the skin and cervical lymph nodes	Localized raised mass	A sheet of lymphocytes; epithelium infiltrated some fibrosis present	Biopsy and irradiation	Nil	Died 4 years after onset with metastases in the spleen, liver, and lymph nodes
22	58	M	Bulb and inner canthus (R eye)	Gradual onset over 6 months; blood count and ESR normal; lesion on opposite side recurred 2½ years and 3 years after excision	Localized raised mass	A sheet of lymphocytes with a few plasma cells and reticulum cells; infiltration of lymphatic vessels	Excision	Six-and-a-half years after onset	Alive and well 6½ years after onset; residual bilateral lesions at both inner canthi
23	51	F	Upper fornix (R eye)	Present 2 years with ptosis; blood count and ESR normal; similar lesion on opposite side	Widespread raised lesion	A sheet of lymphocytes with a fairly large number of plasma cells, a few Russell bodies, and a few reticulum cells, some of the latter being multilobulated	Biopsy and irradiation	Three, 4 and 6 years after onset, and treated by irradiation	Died 7 years after onset with metastases in the liver and spleen
24	40	F	Upper fornix and inner canthus (R eye)	Present 4 years; gradual increase in size; blood count and ESR normal; similar lesion in opposite eye recurred 5 years, 6 years, and 8 years after onset, and irradiated	Widespread raised lesion	A sheet of lymphocytes and occasional reticulum cells	Biopsy and irradiation (3000 r in 21 days)	Nil	Alive and well 8 years after onset, with no evidence of any tumour
25	50	M	Bulb (L eye)	Present 9 months; blood count normal; similar lesion in other eye irradiated; hepatomegaly and inguinal lymphadenopathy for same period	Localized papillary lesion	A sheet of lymphocytes with a few reticulum cells	Biopsy and irradiation (750 r in 15 days)	Nil	Died 4 years after onset; lesions in L iliac fossa
26	50	M	Lower fornix and caruncle (R eye)	Present 5 years; blood count and ESR normal	Localized papillary lesion	A sheet of lymphocytes with prominent germinal follicles	Excision	Nil	Alive and well 5½ years after onset

Table I Clinico-pathological features, primary treatment, and follow up cases studied—continued

Multilobulated reticulum cells were also present (Fig. 12) and Russell bodies and plasma cells (Fig. 13) were features of case 23.

A review of the clinical and histological features of the four cases diagnosed initially as lymphosarcoma (cases 11, 15, 19, and 24) and did not disseminate is shown in Table V. A tumour which was diagnosed as lymphosarcoma (case 21) and which disseminated four years after the onset is

included for comparison. It will be seen that there were no histological features which might have indicated that case 21 would disseminate and that the other four cases would not, nor was the outcome related to the primary treatment (Table I). The histological features of case 19 (Fig. 14) are identical to those of case 21 (Fig. 15), the latter patient dying with widespread lymphosarcomatous lesions.

A comparison of the 20 cases which were diag-

Case	Initial Diagnosis	Follow Up	Final Diagnosis
1	Benign lymphoma	Alive and well 18 years after onset	Non-disseminating tumour
2	Benign lymphoma	Alive and well 15 years after onset	Non-disseminating tumour
3	Benign lymphoma	Died from coronary thrombosis 11 years after onset	Non-disseminating tumour
4	Benign lymphoma	Alive and well 16 years after onset	Non-disseminating tumour
5	Benign lymphoma	Alive and well 11 years after onset	Non-disseminating tumour
6	Benign lymphoma	Died from pneumonia 5 years after onset	Non-disseminating tumour
7	Benign lymphoma	Alive and well 12 years after onset	Non-disseminating tumour
8	Benign lymphoma	Died from cardiac failure 4½ years after onset	Non-disseminating tumour
9	Benign lymphoma	Alive and well 6 years after onset	Non-disseminating tumour
10	Benign lymphoma	Alive and well 8 years after onset	Non-disseminating tumour
11	Lymphosarcoma	Alive and well 10 years after onset	Non-disseminating tumour
12	Lymphosarcoma	Died 1 year after onset with widespread metastases	Disseminating tumour
13	Benign lymphoma	Died from coronary thrombosis 5½ years after onset	Non-disseminating tumour
14	Benign lymphoma	Died from lymphosarcoma 5 years after onset	Disseminating tumour
15	Lymphosarcoma	Alive and well 7 years after onset	Non-disseminating tumour
16	Benign lymphoma	Alive and well 13 years after onset	Non-disseminating tumour

Case	Initial Diagnosis	Follow Up	Final Diagnosis
17	Benign lymphoma	Died from cardiac failure 4 years after onset	Non-disseminating tumour
18	Lymphosarcoma	Died 1 year after onset	Disseminating tumour
19	Lymphosarcoma	Died from nephritis 8 years after onset	Non-disseminating tumour
20	Benign lymphoma	Alive and well 7 years after onset	Non-disseminating tumour
21	Lymphosarcoma	Died 4 years after onset	Disseminating tumour
22	Benign lymphoma	Alive and well 6½ years after onset	Non-disseminating tumour
23	Benign lymphoma	Died 7 years after onset	Disseminating tumour
24	Lymphosarcoma	Alive and well 8 years after onset	Non-disseminating tumour
25	Lymphosarcoma	Died 4 years after onset	Disseminating tumour
26	Benign lymphoma	Alive and well 5½ years after onset	Non-disseminating tumour

Table II Comparison of final diagnosis with initial diagnosis after follow up

Initial Diagnosis	Final Diagnosis	
	Non-disseminating Tumour	Disseminating Tumour
Benign lymphoma (18 cases)	16	2
Lymphosarcoma (8 cases)	4	4

Table III Summary of final outcome of the tumours

Case	Clinical Features	Histopathology
14	Recent onset of localized nodular mass in (L) fornices; similar lesion in other conjunctiva treated by irradiation; blood count normal	A sheet of lymphocytes and occasional reticulum cells, plasma cells, and eosinophils; a focus of reticulum cells and a few multilobulated reticulum cells present
23	Widespread, raised lesion in (R) upper fornix for 2 years; blood count and ESR normal; similar lesion on opposite side	A sheet of lymphocytes with a fairly large number of plasma cells, a few Russell bodies, and a few reticulum cells, some of the latter being multilobulated
4	Lesion of (R) lower fornix inner canthus and palpebra conjunctiva for 2 years	A sheet of lymphocytes with a few plasma cells and reticulum cells, some of the latter being multilobulated

Table IV Two cases diagnosed as benign lymphoma which disseminated and one not disseminating for comparison

Case	Clinical Features	Histopathology
11	Localized papillary mass in (L) bulbar conjunctiva for 4 years; lesion recurred and increased in size gradually	A sheet of lymphocytes with occasional plasma cells and reticulum cells; marked stromal fibrosis
15	Widespread papillary lesion of (R) fornix for 5 months; gradual increase in size; similar lesion in other eye irradiated; blood count normal	A sheet of lymphocytes with occasional reticulum cells, eosinophils, and mitotic figures
19	Localized raised lesion of (L) bulbar conjunctiva for 18 months	A sheet of lymphocytes and occasional reticulum cells
24	A widespread raised lesion of the (R) upper fornix and inner canthus, present for 4 years and increasing in size gradually; similar lesion in opposite eye recurred on three occasions; blood count and ESR normal	A sheet of lymphocytes and occasional reticulum cells
21	Recent onset of localized raised mass in (L) lower fornix; recent onset of lesions in the skin and cervical lymphadenopathy	A sheet of lymphocytes

Table V Four cases diagnosed as lymphosarcoma which did not disseminate and one disseminating for comparison

Fig. 11 *Lymphocytic tumour (lymphosarcoma) of the conjunctiva which disseminated, showing a sheet of lymphocytes with occasional reticulum cells. H and E $\times 130$.*

Fig. 12 *Lymphocytic tumour (lymphosarcoma) of the conjunctiva, showing multilobulated reticulum cells. H and E $\times 590$.*

Fig. 13 *Lymphocytic tumour (lymphosarcoma) of the conjunctiva, showing plasma cells and Russell bodies (arrows). H and E $\times 590$.*

Fig. 14 *Lymphocytic tumour (benign lymphoma), showing a sheet of lymphocytes. H and E $\times 80$.*

Fig. 15 Lymphocytic tumour (lymphosarcoma) showing a sheet of lymphocytes. H and E $\times 130$.

nosed finally as non-disseminating tumours with the six cases of disseminating tumour is shown in Table VI. It will be seen that there were no distinguishing clinical features between the two groups. As far as the six tumours that disseminated are concerned, I

made enquiries about these by letter and can confirm that none of them showed any abnormal lymphocytic or lymphoblastic activity in the blood stream. Two tumours (cases 20 and 26) in the non-disseminating group showed germinal follicles which were not seen in any of the six tumours which disseminated. One tumour that disseminated showed infiltration of the tissues by lymphoblasts (case 12), a feature which was not seen in any of the non-disseminating tumours. Apart from these two features, however, there were no histological criteria to suggest a diagnosis of either benign lymphoma or lymphosarcoma.

Discussion

Twenty-six lymphocytic tumours of the conjunctiva were classified into benign lymphoma and lymphosarcoma on their initial histological appearances. They were followed up for more than five years, and on the basis of their clinical behaviour were reclassified into non-disseminating and disseminating groups. Of the 18 'benign' tumours, two metastasized as lymphosarcomas and of the eight 'malignant' tumours, four did not disseminate. The histological features of these two groups are very similar or identical apart from the fact that one tumour (case 12, a lymphosarcoma) showed lymphoblastic infiltration of the conjunctiva and that germinal follicles were found only in those tumours which did not disseminate. Apart from these two histological features there are no means by which the pathologist

No. of Cases	Histology	Non-disseminating Tumours	Disseminating Tumours
Number of cases		20	6
Age		25 years to 85 years	47 to 62 years
Sex		9 males/ 11 females	5 males/ 1 female
Site (fornices)		10	4
Bilateral cases		5	4
Time present when first seen		Recent to 8 years	Recent to 2 years
Rapid growth of lesion (when recorded)		0	0
Slow growth of lesion (when recorded)		7	1
Localized growth of lesion (when recorded)		15	5
Widespread growth of lesion (when recorded)		3	1
Normal blood count (when done)		16	6
Normal ESR (when done)		6	1
Raised ESR (when done)		0	1
	Other inflammatory cells present	18	5
	Multilobulated reticulum cells present	2	2
	Foci of reticulum cells present	3	1
	Germinal follicles present	2	0
	Infiltration of tissues by lymphoblasts	0	1
	Infiltration of lymphatic vessels by lymphocytes	2	0
	Infiltration of epithelium by lymphocytes	4	1
	Mitotic figures	1	2
	Fibrosis	1	1

Table VI A clinico-pathological comparison of 20 non-disseminating and six disseminating tumours

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can foretell the outcome of these tumours, and a prolonged follow up is necessary in order to arrive at a diagnosis of benignity or malignancy.

The nature of these non-disseminating lymphocytic tumours is not known. It is possible that they represent lesions of lymphoid hyperplasia due to some aetiological agent such as a microorganism, chemical injury, or irradiation. The presence of other inflammatory cells and germinal follicles in some cases support this contention, but no evidence of any aetiological agent has been demonstrated in any of the reported cases. The other possibility is that they may be true neoplasms having a very low degree of malignant potential, and this suggestion is supported by the fact that they have a similar or identical histological picture to lymphosarcoma. If they are malignant tumours, however, it is strange that they do not eventually disseminate even after prolonged periods of time. At the present moment the question of their true nature must remain unanswered.

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