The value of second opinion in lymph nodes pathology

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Abstract

Seventy-seven hematoxylin-eosin stained lymph node sections were independently examined by two specialist pathologists. The percent agreement and kappa statistic were calculated to determine the rate of interobserver concordance. The two pathologists disagree about two cases (2.4%) as whether they are neoplastic or reactive lesions, and disagree about four cases out of 46 (8.6%) whether they are tuberculous or non-tuberclous. Two cases out of 57 (3.4%) were disagreed upon whether they are reactive lymphadenopathy or malignant lymphoma. The overall agreement between the two pathologists was high (91.3-100%) with kappa ranges from 0.81-1 (almost perfect agreement). Further studies that involve a consultant pathologist and lymph node sections stained with special stains and immunohistochemistry are recommended.

Introduction

Histopathology is the gold standard for the diagnosis of tumors. However, this "gold standard" is not consistently reliable [1,2]. The human cost for erroneous pathological diagnosis is tremendous in term of disability, suffering & death. Studies have shown that interobserver discrepancy rate may reach up to 10%-30% [3] (18.3% for bladder [4], 3.9% for breast [5], 12.7 % for ovary (6), 1.3% for prostate [7], and 25% for soft tissues [8]. Careful literature search for data on the interobserver disagreement in lymph node pathology provide scarce yield and – to our knowledge – such studies have not been conducted in Iraq.

This study is aims to determine whether re-reading of histopathologic sections of lymph nodes by a second pathologist will significantly alter the original diagnosis.

Materials and Methods

Seventy-seven hematoxylin-eosin stained lymph node sections were independently assessed by two board-certified surgical pathologists from the department of pathology, Tikrit college of medicine, Iraq. The diagnostic concordance was assessed by calculating the percent agreement and the kappa statistic

Kappa was interpreted according to the following table (9)

kappa	Agreement
< 0	Less than chance agreement
0.01-0.20	Slight agreement
0.21-0.40	Fair agreement
0.41-0.60	Moderate agreement
0.61-0.80	Substantial agreement
0.81-0.99	Almost perfect agreement

Results

Table (I) compares the rates of agreement & disagreement between pathologist A and pathologist B in terms of reactive versus neoplastic lymph nodes lesions (including malignant lymphoma and metastatic deposits). One case out of 77 (1.2 %) was considered as neoplastic by pathologist B. another case (1.2 %) was reported by pathologist A as neoplastic was considered as reactive by pathologist B. The percent agreement was (97.4%) and kappa = 0.94

Table (II) compares the rates of agreement & disagreement between pathologist A and pathologist B in terms of non-specific reactive lymphadopathy versus tuberculous lymphadenopathy. Two cases out of 46 (4.3%) were considered as non-specific reactive lymphadenopathy by pathologist A, but were reported as tuberculous lymphadenopathy by pathologist B. Another two cases (4.3 %) was reported by pathologist A as tuberculous lymphadenopathy were reported as non-specific reactive lymphadopathy by

pathologist B. The percent agreement was (91.3%) and kappa = 0.81

Table (III) shows the agreement & discrepancy rates in term of Hodgkin's disease versus non-Hodgkin's lymphoma. The two pathologist fully agreed about the typing of all cases of lymphoma (percent agreement = 100% and kappa = 1).

Table (IV) compares the rates of agreement & disagreement between pathologist A & pathologist B in terms of reactive lymphadenopathy versus malignant lymphoma. One case out of 57 (1.7 %) was reported as reactive lymphadenopathy by pathologist A was considered as malignant lymphoma by pathologist B. Another case (1.7 %) was reported by pathologist A as malignant lymphoma was considered as reactive by pathologist B. The percent agreement was (96.5%) and kappa = 0.88.

Discussion

This study attempts to assess whether or not a slide re-reading improves the diagnostic accuracy for lymph node pathology. Overall agreement between the two pathologists was high (91.3%-100%) with kappa range from 0.81-1 (almost perfect agreement). This is probably explained by the equivalent qualification of the two pathologists (both are Iraqi board certified) with relatively same post certificate period of practical experience (3-5 years).

Upon classifying lymph node sections into reactive or neoplastic subgroups, the percent agreement was high (97.4%; kappa = 0.94). However, Two cases out of 77 (2.4%) were disagreed upon if they are reactive or neoplastic process (primary lymphoma or metastatic deposit). The opinion of a senior consultant pathologist and the use of special stains (such as silver-based reticulum stains to differentiate epithelial from non-epithelial neoplasms-in epithelial tumors reticulin fibers separate nests of cells while in large cell lymphoma they separate individual cells) & immunohistochemical markers may provide the correct diagnosis.

The two pathologists disagree about four cases whether they represent a tuberculous lymphadenopathy or a non-specific reactive process. Although the high kappa value (0.81) indicates very good agreement, clinically we still need to know the true diagnosis of these cases. The use of special stains (Zeil-Neelsen stain) may resolve this conflict (10) especially to role out the non-caseating granulomas of Hodgkin's disease.

Again the two pathologists disagree about the diagnosis of two cases (reactive process versus malignant lymphoma). Statistically the agreement rate is excellent (kappa = 0.88), but clinically the impact of misdiagnosis of malignant lymphoma remains stunning. Immunohistochemisty may resolve the problem (11).

Unfortunately, and despite the careful search of the literature, data from similar studies were not available for comparison.

Recommendation: further studies preferably involving more than two pathologists and at least one senior consultant or consultant pathologist will probably explore better the diagnostic reproducibility in lymph node pathology.

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Table (I): Neoplastic vs Reactive Lymph Node Lesions

		Pathologist A		
Pathologist B		NEOPLASTIC	REACTIVE	Total by B
	NEOPLASTIC	30	1	31
	REACTIVE	1	45	46
Total by A		31	46	77

Kappa = 0.94/ Percent Agreement = 97.4%

Table (II): Tuberculous vs Non-specific Lymph Node Lesions

		Pathologist A		
Pathologist B		Tuberculosis	Nonspecific reactive	Total by B
	Tuberculosis	17	2	19
	Nonspecific reactive	2	25	27
Total by A		19	27	46

- Kappa = 0.81/ Percent Agreement = 91.3 %

Table (III): Hodgkin's Disease vs Non-Hodgkin Lymphoma

		Pathologist A		
Pathologist B		Hodgkin's disease	Non Hodgkin lymphoma	Total by B
	Hodgkin's disease	4	0	4
	Non Hodgkin lymphoma	0	6	6
Total by A		4	6	10

- Kappa = 1/Percent Agreement = 100 %

Table (IV): Reactive Lymphadenopathy vs Malignant Lymphoma

		Pathologist A		
Pathologist B		Reactive	Lymphoma	Total by B
	Reactive	45	1	46
	Lymphoma	1	10	11
Total by A		46	11	57

- Kappa = 0.88/ Percent Agreement = 96.5 %