Synoptic Reporting for Hematopathology

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Introduction

Synoptic reporting has been implemented in multiple pathology subspecialties to improve efficiency, accuracy, and provide an adjunct learning tool for trainees in academic institutions. The College of American (CAP) synoptic reports provide easily accessible, practical cancer checklists to standardize surgical pathology reports. We have recently completed the implementation of a synoptic reporting system for all sections of hematopathology including: bone marrow aspirate and biopsy, flow cytometry, coagulation, lymph node pathology, and peripheral blood smear.

Design

This web-based synoptic reporting system is implemented in Hypertext Markup Language (HTML), and JavaScript, a scripting language for adding dynamic features to web pages, which allows users to interact with graphic interface components of each web page through buttons, lists, and text boxes to enter or retrieve the desired information. Templates for malignant and benign entities in hematopathology were constructed for all sections of hematopathology. The templates for each section are compiled from hundreds of selected reports previously issued for patient care in our institution. They represent typical reports, which cover a wide spectrum of clinical findings, and are designed to be used in tandem with a laboratory information system (LIS). Users access the system via the internet (www.hemepathreview.com), select the appropriate section, and choose from a series of relevant findings for the particular case of interest. Each data input panel is tailored to the specific section. After the criteria for the case are applied, multiple drafts are generated in the report template display window. Once a template is chosen as a draft, it may then be copied to the LIS and modified online to construct the final report. Residents, fellows, and attendings were instructed to use the templates and provide feedback on the impact of this synoptic reporting system on various facets: efficiency, time to generate reports, accuracy, and typographical errors.

E.T CELL A

9. SPLEEN, PTCL, NOS
35. Left inguinal lymph node biopsy: Angioimmunoblastic T cell lymphoma
40. Anaplastic large cell lymphoma, ALK positive
44. SKIN BX: MYCOSIS FUNGOIDES
49. SKIN BX: panniculitis-like T cell lymphoma
78. Anaplastic large cell lymphoma, ALK positive (monomorphic variant)

F.NK CELL

91. Skin, right nasal, biopsy: Extranodal NK/T –cell lymphoma

91. Skin, right nasal, biopsy: Extranodal NK/T –cell lymphoma B

Skin, right nasal, biopsy:

- Extranodal NK/T –cell lymphoma

Histologic sections of the skin biopsy shows dermal lymphocytic infiltrates admixed with extensive crush artifacts. Focal areas with coagulative necrosis and angiodestructive infiltrates are also seen. Immunohistochemical stains, with adequate controls, are performed on block 1A for CD2, CD3, and CD56. An abnormal subpopulation of intermediate-large lymphocytes is found to be positive for CD2 and CD56. They are negative for CD3. These abnormal lymphocytes are admixed with small mature lymphocytes that are positive for CD2, CD3, and negative for CD56. The morphological and immunostain findings are consistent with extranodal NK/T-cell lymphoma.

Fig. 1. Template reports for lymph nodes, (A) partial list of lymph node templates, (B) a typical report template.

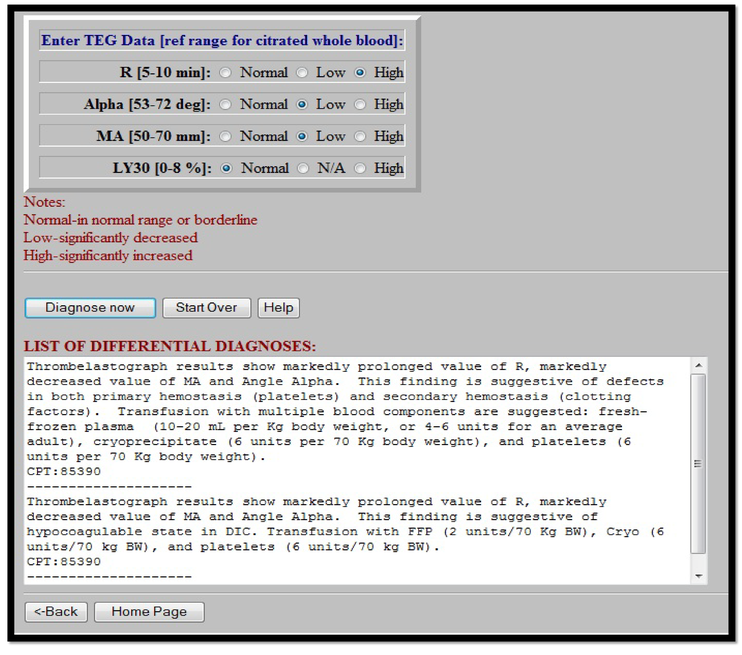

Fig. 3.Template reports for thromboelastograph (TEG).

Hematogones A

35. BM: hematogones
154. BM: 20% hematogones in 15 y/o male with neuroblastoma
137. BM: normal, 2 gates- APL in remission with 3% hematogones
110. BM: 5% hematogones: APL, s/p chemo

154. BM: 20% hematogones in 15 y/o male with neuroblastoma B
Immunophenotyping of bone marrow aspirate by flow cytometry shows a lymphocytic population (Gate #1) with normal immunophenotype. A sub-population of hematogones is found (Gates #2 and #3) which express CD45, HLA-DR, CD34 (variable), CD10, CD19, CD20 (variable), and TdT (variable). Scattergrams of these markers show a smear-out pattern indicating a continuum of maturation, consistent with that of hematogones. The hematogones account for approximatedly 20% of the bone marrow cells. Note that hematogones may be increased in bone marrow of very young patients. Impression: presence of a sub-population of hematogenes in bone marrow; no evidence of hematologic malignancy.
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Fig. 2. Template report for flow cytometry, (A) partial list of flow cytometry templates, (B) a typical flow cytometry report template.

Results

The synoptic reporting system was first introduced in July 2008 and was expanded through its completion in June 2011. The residents and fellows used the system since its origination to generate reports which were then reviewed by faculty before final verification. Evaluation of the synoptic reporting system in early phase of this project by users has been overwhelmingly positive with all users (20 out of 20) reporting a marked improvement in completeness of the reports, a significant reduction in typographic errors and turn-around-time (40%), greater accuracy, and favorable reviews regarding the effectiveness of the system. Our evaluation of the synoptic reporting system is still under progress to cover different panels in all sections.

Conclusion

We have demonstrated that a synoptic reporting system for hematopathology is practical, efficient, and effective at all training levels in our academic institution. It is our intention that this reporting system can be applied to multiple sections of hematopathology and help to standardize reporting for training purpose.