

An audit on completeness of reporting Whipple's specimens

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Abstract

Introduction

This audit is focused on assessing the completeness of vital information in traditional reports of Whipple's procedure, using the Royal College of Pathologists data sets for pancreatic cancer reporting as the benchmark. We believe a standardized reporting system will take into account significant variables that may impact treatment quality.

Methodology

This is a descriptive cross sectional study. A hundred and forty-three Whipple's histopathological reports were examined and compared to The Royal College of Pathologists data set for reporting of carcinomas of pancreas, ampulla of Vater and common bile duct.

Results

The length of the reports varied markedly with the shortest report having 156 words and the longest report having 1095 words. The median word count was 385 words. The frequency of reporting the variables varied too. Type of tumour was documented in 100% of reports whereas variables such as nodal stage and superior mesenteric artery resection margin were reported in only 76.9% and 35% of reports respectively, both having direct implications on prognosis. Further the frequency of reporting of the background pathology was low as 24.5%.

Conclusions

Due to the descriptive nature of the traditional pathological reporting system, some of the significant variables can be missed while converting what is observed in to a report. This may impact adversely in planning adjuvant treatment and evaluation of prognosis after surgery. Adherence to a standardized synoptic reporting system may help to overcome this drawback.

Introduction

Pancreatic cancer is one of the leading causes for cancer-related deaths worldwide [1].

Comprehensive and accurate reporting of pathological specimens in pancreatic cancer is important in confirming the diagnosis and predicting the prognosis of the patients. This in turn helps in planning adjuvant therapy and follow up of the patient. It also helps in evaluating quality of services such as surgery and radiology. Accurate pathology reporting also contributes to the development of adjuvant therapy and facilitates high quality research [2, 3].

Whipple specimen is a complex sample that includes multiple margins. The establishment of a general consensus of nomenclature, definitions and standardized protocol of pathological reporting for Whipple specimen is crucial especially considering the complexity and the extent of different variables in the specimen.

In Sri Lanka reporting of Whipple specimen is still performed using traditional descriptive reports. This audit assessed the completeness of vital information in traditional reports against The Royal College of Pathologists data set for pancreatic cancer reporting [4].

Methodology

This is a descriptive cross sectional study. All histopathology reports of Whipple surgery performed from 2011 to 2019 for at Colombo North Teaching Hospital [CNTH] and Colombo South Teaching Hospital [CSTH] were reviewed and reports with malignant disease were selected. There were total of 143 reports. In both centres, standard pylorus resecting Whipple surgery was performed. Uncinated process was completely resected from the superior mesenteric artery and the margins marked. All had standard lymphadenectomy [stations 5, 6, 8a, 12b1, 12b2, 12c, 13a, 13b, 14a, 14b, 17a, and 17b.] [5, 6].

The specimens were fixed in formaldehyde and examined. After identification and measurements of gross anatomical structures, the tumour was identified and the tumour site, size, type, grading, its relationship to the surrounding structures and the transection margins were recorded. Lymph nodes were also sampled.

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The Royal College of Pathologists data set for reporting of carcinomas of pancreas, ampulla of Vater and common bile duct, which constitute of macroscopic and microscopic core data sets were used as a guide for reporting. Macroscopic core data set includes six items type of specimen, site of tumour, maximum tumour dimension, resection margins, and presence of a named vessel and background pathology. Microscopic core data includes histological type of tumour, histological differentiation, size and maximum extent of local invasion, peri neural invasion, named vessel involvement, lymph node status, resection margin status, regression following neo adjuvant therapy, background abnormalities, completeness of resection, TNM stage and SONMED CT [Systematized Nomenclature of Medicine Clinical Terms] codes.[7] However, standard unstructured report was produced as the final product after evaluating slides.

All 143 pathology reports were studied by an MBBS qualified doctor. Twenty-two of variables that are in accordance with The Royal College of Pathologists guidelines were looked for in each of the reports using a checklist. Complete pathology report was read minimum of two times and picked up points were highlighted. Subsequently each variable was entered in to a separate SPSS [for Windows™ Version 16.0, SPSS, Inc., Chicago, IL, USA] database. Each variable was then presented as frequencies indicating whether they reported or unreported and analysed as percentages. The word count of each report was recorded and the median was calculated.

Results

The median age of the group was 56 years [range 17 - 81] and 72% were males. The length of the reports varied markedly with the shortest report having 156 words and the longest report having 1095 words. The median word count was 385 words.

Type of tumour was documented in all the reports [100%] and the site of the tumour was reported in 93.3% of the time. Pancreatic and bile duct transection margins were reported in 94.4% and 89.5% of the reports respectively. Posterior dissection margin was reported in 76.2% and the anterior dissection margin was reported in 71.3% only. The reporting on the SMA dissection margin was even less with only 35% of the reports having the data. Size of the tumour was documented in 90.9 % of the specimens. Tumour type was documented in 100% of the reports. However, the background pathology was only recorded in 24.5% of the specimens. Lymphovascular invasion and perineural invasion was reported in 79.7% and 79% respectively.

Total number of lymph nodes harvested was documented only in 89.5% of the patients. Number of involved lymph nodes was documented in 99.3%. However, the N stage was

documented only in 76.9% of the reports. Tumour differentiation was documented only in 62.9% of the reports.

Discussion

The Whipple's specimen is unique and complex sample due to the three dimensional arrangement of the adjacent structures and margins [8]. It has multiple resection margins. Transection margins are those of pancreatic neck, common bile duct, superior mesenteric artery, jejunum and stomach.

Table 1. The number of reported and non-reported variables were tabulated

Variable	Reported percentage (N=143)
1.Site of the tumor	93.7
2.Type of the specimen	100
3.Maximum tumor diameter	90.9
4.Macroscopic margin involvement	81.8
5.Histologic Type	100
6.Tumor differentiation/grading	62.9
7.Maximum extent of invasion (T)	98.4
8.Gastric transection margin	93
9.Duodenal transection margin	93
10.Pancreatic transection margin	94.4
11.Bile duct transection margin	89.5
12.SMV, SMA dissection margin*	35
13.Posterior dissection margin	76.2
14.Anterior dissection margin	71.3
15.Lymphovascular invasion	79.7
16.Perineural invasion	79
17.Total number of nodes	89.5
18.Total number of nodes involved	99.3
19.N stage	76.9
20.Background pathology	24.5
21.Pathological TNM staging	81.8
22.Resection status	1.4

The dissection margins are the superior mesenteric vein margin and the posterior margin overlying the aorto-caval groove. Anterior surface is not a true dissection margin but its involvement is known to increase the local recurrence [9]. Whipple surgery for malignant disease carries a variable prognosis influenced by many factors. Offering adjuvant treatment is an important decision after surgery [3]. For both these, resected specimen holds many answers.

R - 1 resection of the SMA margin is a known risk factor for poor prognosis after pancreatic cancer resection [9, 10]. Reporting of the SMA margin was low as 35% in the reports that were analysed. The reporting on other dissection margins was also less compared to the pancreatic transection margin. Margin status is an important parameter in deciding on adjuvant treatment [3]. Histological grading and the degree of differentiation have shown a clear impact on the prognosis in most studies [11]. The reporting on histological grading was 62.9%, which is less compared to the percentage of reporting on other variables.

Background pancreatic pathology was reported only in 24.5% of cases that we evaluated. Knowing the background status of the pancreas is important in the follow-up after surgery – especially when there is auto immune pancreatitis, atrophy and fibrosis [12]. Adenocarcinomas originating from the ampulla of Vater is known to have either intestinal differentiation or pancreatico biliary type differentiation with latter type having a poorer prognosis [13]. This information was not available in most of the reports.

Intrapancreatic perineural invasion and extra pancreatic neural plexus invasion are correlated. This is identified as a major cause for local recurrence [14] which was not uniformly documented in the reports. Lymph nodes are another important area of assessment. Though the number of nodes positive was stated total number harvested nodes were inconsistent. The rates of reporting on lympho vascular and perineural invasion were less than 80% in the sample. These parameters related to nodes are considered as important prognostic markers [15 - 18].

Value of adjuvant chemotherapy is well recognized in pancreatic cancer [3]. It is recommended in patients with poor prognostic tumours indicated by surrogate markers in the pathology specimen [9]. Missing valuable data in the specimen can sometime affect this important decision-making.

Traditional report has almost 400 words typed as a description. We observed that typing process itself takes significant time of a computer operator. By using synoptic reporting chances of missing variables we observed could be

minimized and the time taken to type and read a report can be reduced.

In conclusion, due to the descriptive nature of the traditional pathological reporting system, some of the significant variables can be missed while converting what is observed in to a report. This may impact adversely in planning adjuvant treatment and evaluation of prognosis after surgery. Adherence to a standardized synoptic reporting system may help to overcome this drawback.

Ethical Clearance

The study was conducted in accordance to the Helsinki Declaration of 1975, as revised in 2000.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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