http://dx.doi.org/10.1016/j.hpb.2016.11.002 HPB

ORIGINAL ARTICLE

Utility of a multidisciplinary tumor board in the management of pancreatic and upper gastrointestinal diseases: an observational study

David G. Brauer[1], Matthew S. Strand[1], Dominic E. Sanford[1], Vladimir M. Kushnir[2], Kian-Huat Lim[2], Daniel K. Mullady[2], Benjamin R. Tan Jr.[2], Andrea Wang-Gillam[2], Ashley E. Morton[2], Marianna B. Ruzinova[3], Parag J. Parikh[4], Vamsi R. Narra[5], Kathryn J. Fowler[5], Majella B. Doyle[1], William C. Chapman[1], Steven S. Strasberg[1], William G. Hawkins[1] & Ryan C. Fields[1]

[1]Department of Surgery, [2]Department of Medicine, [3]Department of Pathology and Immunology, [4]Department of Radiation Oncology, and [5]Mallinckrodt Institute of Radiology, Barnes-Jewish Hospital and the Alvin J. Siteman Cancer Center at Washington University School of Medicine, Saint Louis, MO, USA

Abstract

Background & objectives: Multidisciplinary tumor boards (MDTBs) are frequently employed in cancer centers but their value has been debated. We reviewed the decision-making process and resource utilization of our MDTB to assess its utility in the management of pancreatic and upper gastrointestinal tract conditions.

Methods: A prospectively-collected database was reviewed over a 12-month period. The primary outcome was change in management plan as a result of case discussion. Secondary outcomes included resources required to hold MDTB, survival, and adherence to treatment guidelines.

Results: Four hundred seventy cases were reviewed. MDTB resulted in a change in the proposed plan of management in 101 of 402 evaluable cases (25.1%). New plans favored obtaining additional diagnostic workup. No recorded variables were associated with a change in plan. For newly-diagnosed cases of pancreatic ductal adenocarcinoma (n = 33), survival time was not impacted by MDTB (p = .154) and adherence to National Comprehensive Cancer Network guidelines was 100%. The estimated cost of physician time per case reviewed was $190.

Conclusions: Our MDTB influences treatment decisions in a sizeable number of cases with excellent adherence to national guidelines. However, this requires significant time expenditure and may not impact outcomes. Regular assessments of the effectiveness of MDTBs should be undertaken.

Received 24 June 2016; accepted 11 November 2016

Correspondence

Ryan C. Fields, Department of Surgery, Barnes-Jewish Hospital, Washington University School of Medicine, 660 South Euclid Avenue, Campus Box 8109, St. Louis, MO 63110-8109, USA.
E-mail: fieldsr@wudosis.wustl.edu

Introduction

Multidisciplinary coordination of care is a requirement for Commission on Cancer accreditation[1] and is recommended in guidelines from national organizations including the National Comprehensive Cancer Network (NCCN).[2] Often this coordination of care takes the form of multidisciplinary tumor boards (MDTBs) with the intent to promote decreased variation in practice patterns, assure appropriate use of health care resources, offer educational opportunities for medical professionals, and improve outcomes of cancer care for select patient populations.[3] The use and benefits of MDTBs have been reported across various cancer pathologies, including breast,[4,5] gynecologic,[6–9] urologic,[10,11] upper gastrointestinal,[12] and thoracic[13–15] malignancies.

Previous presentations: This work was presented at the Gastrointestinal Cancers Symposium 2016, January 21–23, San Francisco, CA, USA.

Please cite this article in press as: Brauer DG, et al., Utility of a multidisciplinary tumor board in the management of pancreatic and upper gastrointestinal diseases: an observational study, HPB (2016), http://dx.doi.org/10.1016/j.hpb.2016.11.002

However, the utility of these conferences has been the subject of debate. In some studies, multidisciplinary review of radiology or pathology altered diagnoses and treatment plans in as many as 50% of reviewed cases[5,9,16] and improved survival for solid organ tumors.[17–19] Other groups have reported no difference in outcomes, including a review of 138 VA medical centers that failed to demonstrate an association with MDTBs with overall survival and oncologic quality measures.[20,21] Clinician non-adherence to MDTBs recommendations, which has been reported to be as high as 10–15%, can further limit the effectiveness of these meetings, and is often the result of inadequate consideration of patient preference or comorbidities during multidisciplinary discussion.[22,23] Finally, external measures of quality, such as adherence to national guidelines, are infrequently reported but have been at or above 80% in certain series.[14,15]

The time required to organize and implement a MDTB must be considered when assessing utility. These conferences are held regularly and the attendance of a number of clinicians and support staff represents a substantial institutional investment of non-clinical hours. In the UK, multidisciplinary conferences are estimated to require one million person-hours annually at a cost of US$75 million, approximately $120 per case reviewed.[24,25] With such a significant institutional investment and varying reports of utility and quality, institutions might benefit from identifying appropriate clinical inclusion criteria and MDTB formats to maximize resources.[3]

Despite prior studies evaluating the multidisciplinary approach in solid organ cancers, the impact of MDTBs in reviewing benign and malignant pancreato-biliary diseases is largely unknown. The purpose of our study was to evaluate the prospectively collected database from our weekly pancreas and upper-gastrointestinal MDTB to i) determine the impact of MDTB on treatment decisions and identify clinical scenarios or diagnoses that might benefit most from MDTB discussion, ii) assess the impact of MDTB on institutional resource utilization, and iii) determine quality of the MDTB process based on adherence to national guidelines. The results of our study may help to enhance MDTBs both at our own institution and other centers and offer a generalizable method of reporting MDTB data.

Methods

Setting

The Pancreas and Upper Gastrointestinal Multidisciplinary Conference at the Washington University School of Medicine and Siteman Cancer Center, held weekly, is attended by hepato-pancreato-biliary (HPB) surgeons, medical and radiation oncologists, interventional gastroenterologists, diagnostic radiologists, pathologists, advanced practitioners, and clinical support staff. Cases eligible for presentation include new or existing outpatient or inpatient cases of benign and malignant pancreatic and upper gastrointestinal conditions. A weekly case list is distributed to a diagnostic radiologist and pathologist, who utilize non-protected time to review the cases prior to conference and then lead the MDTB case discussions.

Data collection and analysis

Data included in this study were prospectively collected for patients presented during the 12-month period from September 2014 to August 2015. The investigational approach included prospective collection of data from the decision-making process, including recording the pre-conference plan, defined as the submitting physician's expected next step in the diagnostic or treatment plan, and the post-conference plan, defined as the majority decision for the next step after case discussion at MDTB. If the pre-conference plan was not explicitly stated during MDTB discussion, chart review of pre-MDTB notes was performed; any missing data was coded as such and excluded from subsequent analyses.

The primary outcome was change in management after MDTB discussion. Descriptive and analytic statistical tests including univariate linear regression, multivariate logistic regression, and Fisher's exact tests were performed using SAS software version 9.4 (SAS Institute, Cary, NC), with all tests two-sided and significance $p < .05$. Mean survival time, either death date or censored at last known follow-up, were compared using student's *t*-test. Adherence to NCCN guidelines for Pancreatic Ductal Adenocarcinoma (PDAC) was determined by retrospective chart review restricted to data available at the time of MDTB presentation and using time-appropriate NCCN guidelines.[2] Estimates of weekly effort were gathered retrospectively via electronic surveys of six diagnostic radiologists, two support staff, and one pathologist. Estimates of potential physician reimbursement were derived using the following facility-price Current Procedural Terminology codes from the Centers for Medicare and Medicaid Services 2015A[26] for metropolitan St. Louis (locality 0530201), one per hour: 99205 (new office visit, Level 5; $168.70), 74177-26 (CT abdomen and pelvis with contrast; $92.32), and 88309 (gross and microscopic pancreatic tissue exam by pathologist; $149.41). Meeting room costs were excluded.

This study was approved by the Institutional Review Board and Human Research Protection Office at Washington University. Reporting of this project follows criteria for the STROBE guidelines for observational studies,[27] version 4, and applicable SQUIRE guidelines for quality improvement reporting,[28] version 2.0.

Results

Four hundred seventy cases were presented at MDTB during the 12-month period. The median age at the time of presentation was 61.5 years (range 17–89) with 51.2% male. The mean number of cases presented weekly was 10.7 ± 2.7. New diagnoses accounted for 174 cases (37.0%), with the remainder categorized

Please cite this article in press as: Brauer DG, et al., Utility of a multidisciplinary tumor board in the management of pancreatic and upper gastrointestinal diseases: an observational study, HPB (2016), http://dx.doi.org/10.1016/j.hpb.2016.11.002