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Our Pancreaticoduodenectomy experiences: Analysis of Single Center Results for Five Years

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Abstract: The objective of our study was to evaluate the correlations between the data of pancreaticoduodenectomy (PD) cases in our clinic in the last five years and also the parameters affecting preoperative and postoperative survey. This study includes the cases which underwent pancreaticoduodenectomy due to different causes in Necmettin Erbakan University Meram Faculty of Medicine General Surgery Clinic between 2014 and 2019. The study evaluated the ages, genders, preoperative albumin, Ca 19.9 and total bilirubin values, histopathological grade, lymphovascular invasion and tumor size based on the pathological preparation acquired during the operation. Ca 19.9, lymphovascular invasion, tumor size and histological grade were evaluated as prognostic factors negatively affecting survival. Preoperatively measured Ca 19.9 is important in prognostic terms. CA 19.9 can be used for the selection of the patient who will undergo pancreaticoduodenectomy and information can be acquired on their survivals.

Keywords: Periampullary region tumor, pancreaticoduodenectomy, whipple operation, pancreas cancer.

Özet: Çalışmamızın amacı son 5 yıl içinde kliniğimizde yapılan pankreatikoduodenektomi(PD) vakalarının verilerini çıkararak bunlar arasındaki korelasyonu, preoperatif ve postoperatif surveye etki eden parametreleri değerlendirmekti. Bu çalışmada Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi Genel Cerrahi Kliniği'nde 2014 ve 2019 yılları içerisinde çeşitli nedenlerle yapılmış olan pankreatikoduodenektomi vakalarını içermektedir. Çalışmada hastaların yaşı, cinsiyeti, preoperatif albumin, Ca 19.9 ve total bilirubin değerleri, ameliyatta elde edilen patolojik preparatta histolojik grade, lenfovasküler invazyon ve tümör boyutu değerlendirildi. Ca 19.9, lenfovasküler invazyon, tümör boyutu ve histolojik grade sağ kalımı olumsuz etkileyen prognostik faktörler olarak değerlendirildi. preoperatif ölçülen Ca 19.9 prognostik açıdan önemlidir. Pankreatikoduodenektomi yapılacak olan hastaların seçiminde CA 19.9 kullanılabilir ve sağ kalımları hakkında bilgi edinilebilir.

Anahtar kelimeler: Periampuller bölge tümörü, pankreatikoduodenektomi, whipple operasyonu, pankreas kanseri.

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INTRODUCTION

Periampullary region tumors are classified as pancreas head cancer, distal choledochal cancers, duodenum cancers and ampulla of vater cancers. The only curative surgical treatment option is pancreaticoduodenectomy in these cancers (1,3). Pancreaticoduodenectomy (whipple operation) is a technique generally applied in periampullary region tumors. It has high mortality and morbidity. Five year survival is less than 10% (1, 2, 11). Although the surgical mortality was reported between 40-60% in the studies of 1960s, it was reported as 3% in recent studies. Morbidity rates are around 40% (3,9). Thus, patient selection is important for the operation. Parallel to literature, the objective of our study was to evaluate preoperative parameters on patient selection, having information on survival in operated patients and share our clinic experience with literature.

MATERIAL and METHOD

163 cases who underwent pancreaticoduodenectomy due to different causes in Konya Necmettin Erbakan University Meram Faculty of Medicine General Surgery Clinic between 2014 and 2019 were retrospectively examined. Ages, genders, preoperative Ca 19.9, albumin and total bilirubin values, histological grade, lymphovascular invasion and tumor size based on the material acquired during the operation were examined. These values were calculated using IBM SPSS statistics 20 and the prognostic values were presented.

RESULTS

163 PD patients were included in the study. General information of the patients was shown in Table 1.

Gender	Male: 107 (65%)	Female: 56(35%)
Age	<65: 75(46%)	>65: 88(54%)
Ca 19.9	<100: 82(50%)	>100: 81(50%)
Albumin	<3.5: 69(42%)	>3.5: 94(58%)
Total bilirubin	<5: 116(71%)	>5: 47(29%)
Histological Grade	Grade 1: 63(45%)	Grade 2 and 3 :75(55%)
Lymphovascular invasion	Yes: 79(57%)	No: 59(43%)
Tumor size	<2: 60(38%)	>2: 96(62%)

Table 1: Patient characteristics

160 of the patients which underwent PD were prediagnosed with periampullary region tumor while the others had PD due to extra hepatic cholangiocellular carcinoma, duodenum invading colon cancer and choledochal cyst (Table 2).

Pancreas head tumor	82(49%)
AmpullaVateri tumor	52(32%)
Choledochal tumor	18(11%)
Duodenum tumor	8(5%)
Extrahepatic chol angi ocellularca	1(1%)
Duodenum invasing colon ca	1(1%)
Choledochal cyst	1(1%)

Table 2: Preoperative diagnoses

Considering the pathology results of these 160 cases, 143 were evaluated as malign, 9 as premalign and 8 as benign (Table 3). Pancreas head carcinomas constituted the most common lesion.

Adenocarcinoma	122(75%)
Mucinosis adenocarcinoma	11 (6%)
Neuroendocrine tm	5(3%)
Mixed adenoneuro endocrine tm	3(1%)
NonHodgkin lymphoma infiltration	1(1%)
Malign Epithelial tm	1(1%)
Mucinosis cystic neoplasia	2(1%)
IPMN	1(1%)
Adenomateous polypoid severe dysplasia	1(1%)
Squameous metaplasia	1(1%)
GIST	1(1%)
Neuroendocrine Hyperplasia	1(1%)
Serous cystic adenoma	1(1%)
Solid pseudopapillary neoplasia	1(1%)
Autoimmune IG G4 related pancreatitis	1(1%)
Cyst hydatid	1(1%)
Chronic pancreatitis	2(1%)
No pathology	4(%2)

Table 3: Postoperative pathology results

General five-year survival was calculated as 25%, three year survival as 42% and one year survival as 63% in the patients included in the study. Eight patients died in the first month (5%).

Four of our patients died in the first 10 days due to sepsis, pulmonary emboli, mesentery ischemia and acute liver failure.

The average age was 64.7 in our study. Average tumor dimension was measured as 28.6 mm.

CA 19.9 levels were observed to increase directly proportional to the increasing tumor size and lymphovascular invasion was also higher in these patients. Albumin level was observed to be low in patients with high bilirubin level. Histological grade was higher in patients diagnosed at elder ages.

Considering age distribution, three-year survival was the same in patients under and over d65 years of age (p=0.78).

Based on the evaluation of the patients with malignity, preoperative Ca 19.9 value over 100 U / mL has a significantly negative effect on survival. While 3-year survival rate was 14.3% in patients with C 19.9 levels over 100 U /mL, it was 51.6% in those with C 19.9 levels below 100 U /mL. (p=0.01).

Total bilirubin value was below 5 mg/dl in 116 patients included in the study. While 3 year survival rate was 42% in individuals with total bilirubin value below 5 mg/dl, it was 33% in those with total bilirubin value over 5 mg/dl. This value was regarded to be insignificant in statistical analysis. Three-year survival was the same (37%) when only the patients with detected malignity were evaluated.

Three-year survey is 35% in patients with preoperative albumin level below 3.5 and 46% in those with a level over 3.5. These value wasn't statistically significant. (p=0.41).

3-year survival was observed to be lower in patients with positive lymphovascular invasion considering the presented values based on postoperative pathology results (24.1%). Three- year survival rate was

57.9% in patients lacking lymphovascular invasion. This value was regarded to be statistically significant. (p=0.01).

Tumor differentiations were separated into two groups as well-differentiated and moderately or poorly differentiated. While the three-year survival is 50% in well-differentiated patients, it is 20.3% in moderately or poorly differentiated patients. These values were statistically significant. (p=0.03).

Three-year survival was 55% for the patients with tumor size under 2 cm and 27% for those over 2 cm. This value was regarded to be statistically significant (p=0.03).

Preoperatively checked Ca 19.9 level and lymphovascular invasion, tumor size and histological grade acquired from postoperative pathology results were observed to have a statistically significant effect on survival based on study data.

No significant effect of patient age and preoperative albumin and bilirubin values was observed on survival.

DISCUSSION

When compared to literature, same three-year survival was observed in our hospital (42%). No difference was observed in survival when extra-pancreatic and pancreatic periampullary region tumors were compared. Three-year survival was 42% in extra-pancreatic periampullary region tumors and 9% in pancreatic ones in literature (7). In another study, 5 year survival in pancreas head cancers was lower than extra-pancreatic periampullary region tumors (9). Tumor location was stated to have no effect on survival in a current study (11).

A study by El Nakeeb et al showed that survival decreased with advanced age and it was considered that evaluation with larger patient populations would be better (8). Another study showed no effect of age distribution on survival (11). Considering age distribution, survival was the same in patients under and over 65 years of age in line with literature (7).

3-year survival was 14% with values below 100 U /mL in our study when Ca 19.9 levels were evaluated. This value is 22% in literature and p value was 0.01 in both studies which was statistically significant (7,8). Examining two separate studies, survival was negatively affected in cases with Ca 19.9 level over 35U / mL (9, 11). A study on P-CRP value showed that P-CRP wasn't correlated with Ca 19.9 but both parameters had a negative effect on survival (11). Another study presenting a significant positive correlation between S100A4 expression and preoperative serum Ca19.9 level, survival was again low in patients with high Ca 19.9 level (12).

While total bilirubin increase had a negative effect on survival in literature when total bilirubin level was evaluated, no significant effect of bilirubin levels was observed on survival in our study (7).

Albumin level didn't have a significant effect on survival in our study. Three-year survey is 35% in patients with preoperative albumin level below 3.5 and 46% in those with a level over 3.5. This rate is statistically insignificant. But 3-year survival is stated to be very low in patients with low albumin level in literature (7).

Negative effect on survival was reported in many studies on lymphovascular invasion (7,8,9,10). In line with literature, three-year survival of the patients with lymphovascular reinvasion was below 25%.

Deteriorated histological grade as in lymphovascular invasion also negatively affects patient survival, in line with literature (7).

While average tumor size was calculated as 28 mm in our study, it was 21 mm in literature (7,8). In line with literature, our study showed that the increase in tumor dimensions decreased survival (7,8).

CONCLUSION

Preoperatively evaluated Ca 19.9 level was significant as a prognostic factor in our study. Again, postoperative tumor size and lymphovascular invasion and histology grade are also parameters accepted to be significant in patient survival evaluation. Different views on all these parameters were reported in different studies in literature. This evaluation can provide more correct information in studies and meta-analysis studies including a larger group. Different studies provided findings on the fact that age, tumor location, albumin and total bilirubin also have effect on survival but the effect of these factors on survival was insignificant in our study (7).

REFERENCES

1. Noor MT, Vaiphei K, Nagi B, Singh K, Kochnar R. Role of needle knife assisted ampullar ybiopsy in the diagnosis of periampullary carcinoma. World J GastrointestEndosc. 2011;3:220-224.
2. Kim CG, Jo S, Kim JS. Impact of surgical volume on nation wide hospital mortality after pancreaticoduodenectomy. World J Gastroenterol. 2012;18:4175-4181.
3. Beger HG, Rau B, Gansauge F, Poch B, Link KH. Treatment of pancreatic cancer: Challenge of the facts. World J Surg. 2003;27:1075-1084.
4. Jarufe NP, Coldham C, Mayer AD, Mirza DF, Buckels JA, Bramhall SR. Favourable prognostic factors in a large UK experience of adenocarcinoma of the head of the pancreas and periampullary region. DigSurg. 2004;21:202–209.
5. Cameron JL, He J. Two thousand consecutive pancreaticoduodenectomies. J AmCollSurg. 2015;220:530-6
6. Cameron JL, Riall TS, Coleman J, Belcher KA. One thousand consecutive pancreaticoduodenectomies. AnnSurg. 2006;244:10-5
7. Şeren TD, Topgül K, Koca B, Erzurumlu K. Factors affecting survival in patients who underwent pancreaticoduodenectomy for periampullary cancers.
8. El Nakeeb A, El Shoraby M, El Dosoky M, Nabeh A, El Sorogy M. Prognostic factors affecting survival after pancreaticoduodenectomy for pancreatic adenocarcinoma (single center experience).
9. Hatzaras I, George N, Muscarella P, Melvin S,Ellison C, Bloomston M. Predictors of Survival in Periampullary Cancers Following Pancreaticoduodenectomy. AnnSurgOncol. 2010 Apr; 17(4): 991–997.
10. Di Martino M, Ielpo B, de Nova JLM, Muñoz EA, Santamaria C et al. Lymph Node Ratio, Perineural Invasion and R1 Resection as Independent Prognostic Factors in Pancreatic Adenocarcinoma: A Retrospective Cohort Study. SurgTechnolInt. 2020 Mar 18;36. pii: sti36/1239.
11. Morimoto M, Honjo S, Sakamoto T, Yagyu T, Uchinaka et al. PrognosticImpact of Pre- and Post-operative P-CRP Levels in PancreaticCancerPatients. YonagoActaMed. 2020 Feb; 63(1): 70–78.
12. Jia F, Liu M, Li X, Zhang F, Yue S. et al. Relationship between S100A4 protein expression and pre-operative serum CA19.9 levels in pancreatic carcinoma and its prognostic significance. World J SurgOncol. 2019; 17: 163.