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The role of clinical pathway in medical quality in patients with digestive tract cancer undergoing surgery: a meta analysis

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Abstract
Objective: To evaluate the role of clinical pathway in medical quality in patients with digestive tract cancer undergoing surgery. **Methods:** The PubMed, EMBASE, Ovid Medline, Web of Knowledge and Cochrane library databases were searched. Meta-analyses were conducted using RevMan 5.3.0 software. **Results**: Total nine studies were included into this meta analysis. The meta analysis result shown that clinical pathway was superior to usual care on average length of stay and inpatient cost (MD=-3.95, 95%CI=-5.39--2.50, P<0.00001; (MD=-3672.67, 95%CI=-5354.35--1990.99, P<0.00001) However, there was no significantly differences between tow group on postoperative impatient time, postoperative complications and readmission.(MD=-4.73, 95%CI=-13.84-4.39, P=0.31;MD=0.77, 95%CI=0.58-1.02, P=0.07;MD=0.92, 95%CI=0.55-1.54, P=0.76). **Conclusion**: our meta analysis results demonstrate that clinical pathway is superior to usual care methods on average length of stay and inpatient cost.
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Keywords: clinical pathway, digestive tract cancer, meta analysis

1.Introduction:

Cancers have become the the leading cause of death developed countries and leading cause of death in developing countries(1).There are limited methods to treat these cancers, of which surgical removal of tumor is one of the most important methods. However, one of the objectives is to reduce variations in clinical practice. For solving this, various methods have been attempted, including clinical pathway(CP)(2,3).

Clinical pathway, namely critical pathway, care paths or critical paths(4). In the 20th century, clinical pathways were first introduced to standardize treatment in the USA(5,6). Now, more and more studies have focused on the role of clinical pathways with a multidisciplinary approach in improving the outcomes of cancer patients(7). A number of clinical pathway have also been developed and published in digestive surgery field(8,9). The clinical pathway is developed and implemented by multi-disciplined subjects to improve the care quality and maximize effectiveness while minimizing clinical cost. To date, lots of studies have proved that clinical pathways can decrease the average length of stay and hospital charges(10,11). However, its role in digestive tract cancer is still controversial.

In here, we performed a meta analysis to investigate the role of clinical pathway in digestive tract cancer patients.

2.Materials and methods:

We performed a search of PubMed, EMBASE,Ovid Medline, Web of Knowledge and Cochrane library from 1990 to the now. The main terms “clinical pathway”, “critical pathway”, “care paths” and “critical paths”, “tumor”, “cancer”, “carcinoma” and “neoplasm” in the title or abstract were used. There was no language restriction for searching strategy.

Data were extracted by independent reviewers using standard forms. The studies which cannot be determined by titles and abstracts were subjected to full text assessment. All relevant text, tables and figures were reviewed for data extraction. Discrepancies were resolved by discussion and consensus. The data was included into this meta analysis if the study could not provide the most comprehensive data.

Cytology and histology were used to diagnose digestive tract cancer. In this meta analysis, Randomized Controlled Trials (RCTs) studies compared clinical pathways with usual care methods in digestive tract cancer were into this paper. The studies involving other cancers were excluded to this meta analysis. Data from study involving patients with serious respiratory, circulatory disorders, liver or renal dysfunction.

Statistical analysis was performed with Review Manager (RevMan) software, version 5.3.0. Related-data from the comparative groups was compared using X^2 test for categorical data, a significant difference was considered when P was less than 0.05. Heterogeneity was evaluated by X^2 and I^2. We analyzed dichotomous variables using estimation of Mean difference (MD) with a 95% confidence interval (95%CI). The presence of heterogeneity among researches was assessed using the I^2 statistic and Chi-square test based on Cochran's Q-test. We considered heterogeneity to be present if the I^2 statistic was >50%, P<0.05 was considered significant, a fixed effects model was used, otherwise the random effects model was used in here.

3.Results:

3.1. Study characteristics

After searching and evaluating the included studies, total 9 documents involving in 1667 digestive tract cancer patients were included into this meta analysis, of which clinical pathway and usual care method was used in 902 patients and in 765 patients, respectively[9,10,12-18]. Among of which three researches involving GC [9,12,15], two involving CC [14,10], moreover, one study involving EC [17], HC [16], OC[13] and PC [18]..

3.2. Average length of stay (ALOS) and postoperative impatient time

As shown in Fig 1, data of nine studies [9,10,12-18] were pooled in here. The meta analysis result shown that clinical pathway was superior to usual care on average length of stay.(MD=-3.95, 95%CI=-5.39--2.50, P<0.00001) However, there was no significantly differences between tow group on postoperative impatient time.(MD=-4.73, 95%CI=-13.84-4.39, P=0.31)(Fig 2).

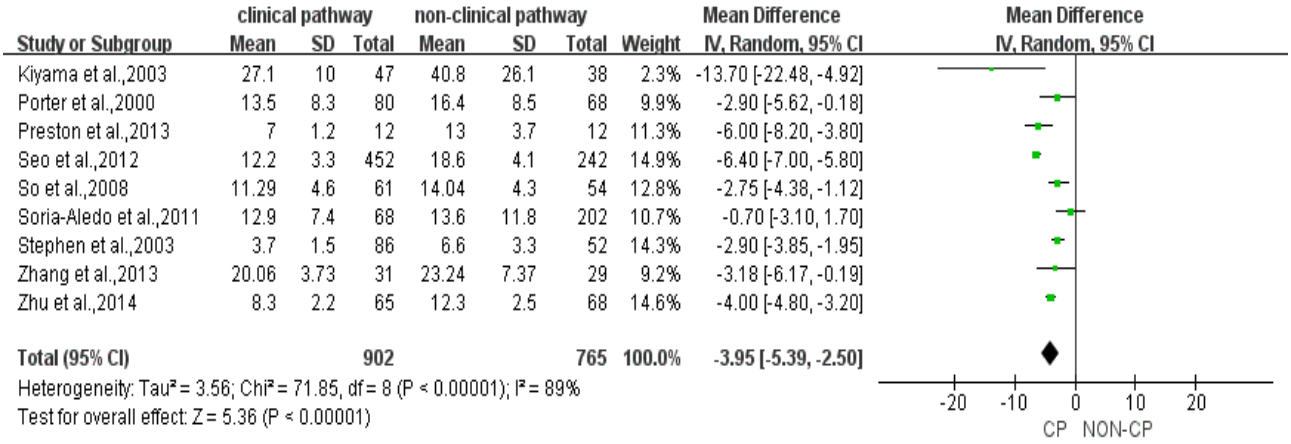

Fig 1. Forest plot of meta analysis in Average length of stay (ALOS).

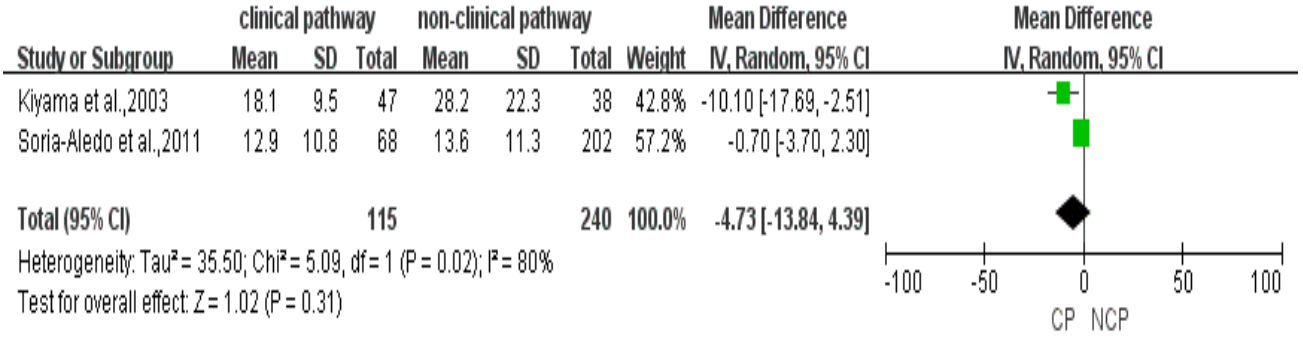

Fig 2. Forest plot of meta analysis in postoperative impatient time.

3.3.Inpatient cost

Total seven studies [9,10,12,15-18] were included into this section. There was a significantly differences on inpatient cost between clinical pathway and usual care.(MD=-3672.67, 95%CI=-5354.35--1990.99, P<0.00001)(Fig 3).

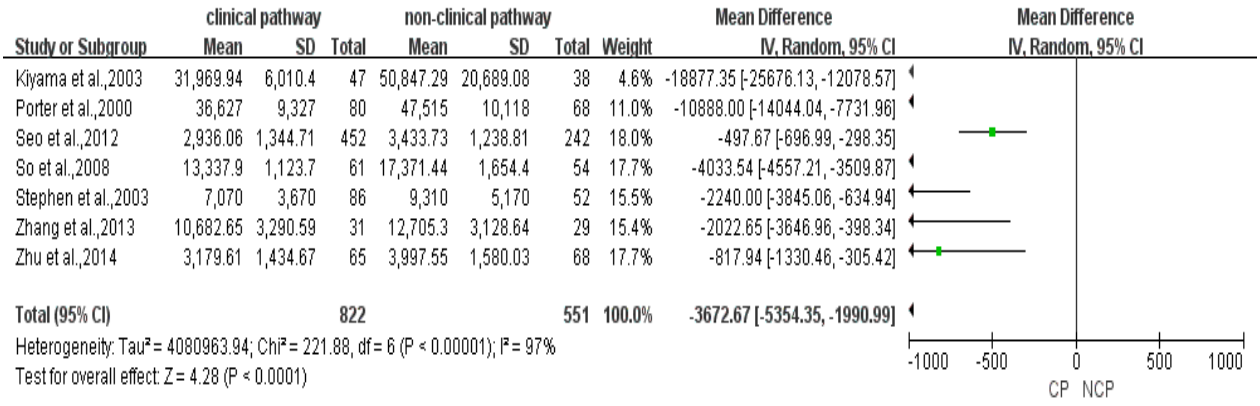

Fig 3. Forest plot of meta analysis in Inpatient cost

3.4.Postoperative complications and Readmission

As shown in Fig 4, the meta analysis result shown that there was no significantly differences between clinical pathway and usual care on postoperative complications.(MD=0.77, 95%CI=0.58-1.02, P=0.07) Moreover, the pooled results indicated that clinical pathway was no superior to usual care on readmission within 30 days.(MD=0.92, 95%CI=0.55-1.54, P=0.76)(Fig 5)

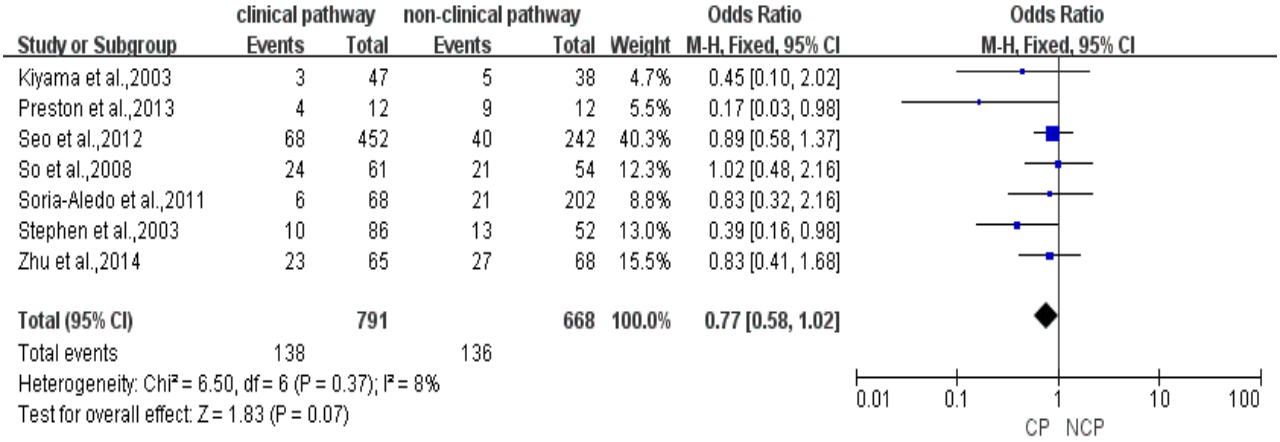

Fig 4. Forest plot of meta analysis in Postoperative complications

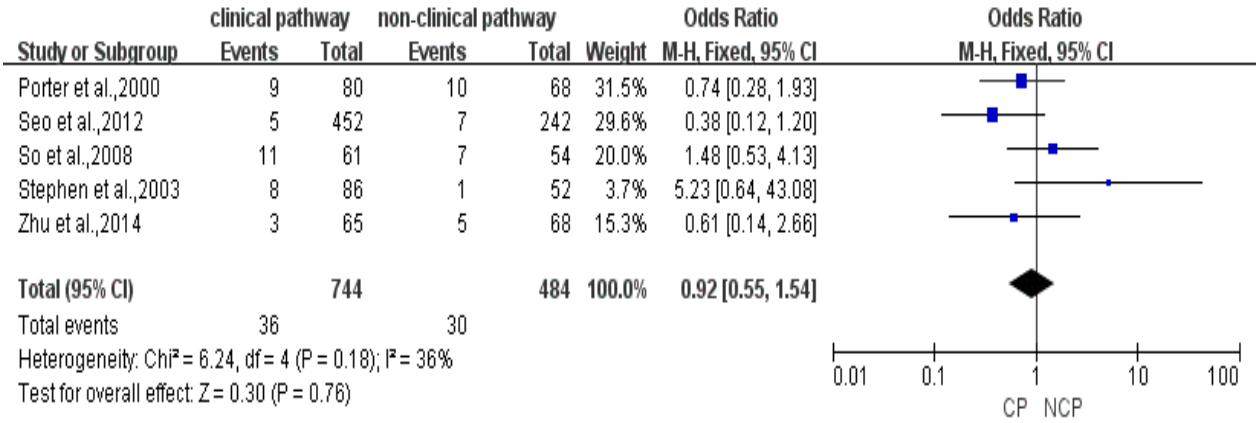

Fig 5. Forest plot of meta analysis in Readmission

4.Discussion:

In here, we performed a meta analysis to investigate the role of clinical pathway in improving medical quality. The pooled results shown that there were significantly differences between clinical pathway and usual care on average length of stay and inpatient cost. Rather, clinical pathway is no superior to usual care on postoperative impatient time, postoperative complications and readmission.

The positive outcomes of clinical pathway application have been proved widely in predictable clinical processes [19,20]. The clinical pathway is an important trend in medicine development, which provides a standardized routine for patient and ensures cost containment. The most role of clinical pathway is to reduce the hospital cost and financial burden of patients, this is because the medical expenditures is a severe barrier for many common patients, and there are lots of patients who can not afford the treatment of cancer-related surgery[21]. Moreover, the standardized clinical pathway can standard medical behavior and improve the medicine quality[22]. In this paper, our meta analysis results shown that the clinical pathway is superior to usual care on average length of stay and inpatient cost. The clinical pathway can significantly reduce length of stay and inpatient cost, which is consistent with previous study[9,15]. However, there is different voices, Soria-Aledo et al. [14] reported that clinical pathway is not superior to usual care on length of stay. Therefore, more related studies should be included into this meta analysis to demonstrate this.

In pooled studies, Soria-Aledo et al. [14] reported that there was no significantly differences between two groups on postoperative impatient time. However, Kiyama et al.[12] demonstrated that clinical pathway can significantly reduce the postoperation time. In addition to these results, our meta analysis have no provide a positive results on postoperative complications and readmission. So, more studies should be included into here in future.

There are some limitations existed in this meta analysis. First, included studies, the related cancer types, relatively small number of researches and subjects were less, which may reduce the statistical power of the meta analysis. Second, the clinical pathway application in included studies are different, which maybe one of caused high heterogeneity, moreover, the hospital level among all included studies were different, specific inpatient cost methods used to generate the data was unclear.

In conclusion, our meta analysis results demonstrate that clinical pathway is superior to usual care methods on average length of stay and inpatient cost.

References:

[1]. Mathers CD, Fat DM, Boerma JT. The global burden of disease: 2004 update. World Health Organization.2008.

[2]. Ruiz P, Rodriguez E, Alcalde J. Informe sobreel Proyecto Nacional parala Gestión Clínica de Procesos Asistenciales.Tratamiento quirúrgico del cáncer colorrectal (II).Desarrollo de la vía clínica. Cir Esp. 2003;74:206-20.

[3]. Carrasco G, Ferrer J. Las vías clínicas basadas en la evidencia como estrategia para la mejora de la calidad: metodología, ventajas y limitaciones. Rev Calidad Asistencial. 2001;16:199-207.

[4]. Alqahtani AR, Elahmedi MO.Pediatric bariatric surgery: the clinical pathway.Obes Surg. 2015;25:910-21.

[5]. Coffey RJ, Richards JS, Remmert CS. An introduction to critical paths. Quality Management in Healthcare 1992;1: 45-54.

[6]. Pearson SD, Goulart-fisher D, Lee TH. Critical pathways as a strategy for improving care: problems and potential. Ann Intern Med 1995;123:941-8.

[7]. Kehlet H, Wilmore DW. Multimodal strategies to improve surgical outcome. Am J Surg 2002;183:630–41.Kehlet H, Wilmore DW. Fast track surgery. Br J Surg 2005;92:3-4.

[8]. Soria-Aledo V, Mengual-Ballester M, Pellicer-Franco E, Carrillo-Alcaraz A, Cases-Baldó MJ, Carrasco-Prats M, Campillo-Soto A, Flores-Pastor B, Aguayo-Albasini JL. Evaluation of a Clinical Pathway to Improve Colorectal Cancer Outcomes. Am J Med Qual. 2011;26:396-404.

[9]. So JB, Lim ZL, Lin HA, Ti TK.Reduction of hospital stay and cost after the implementation of a clinical pathway for radical gastrectomy for gastric cancer.Gastric Cancer. 2008;11:81-5.

[10]. Stephen AE, Berger DL.hortened length of stay and hospital cost reduction with implementation of an accelerated clinical care pathway after elective colon resection.Surgery. 2003;133:277-82.

[11]. Niino T, Hata M, Sezai A, Yoshitake I, Unosawa S, Shimura K, Osaka S, Minami K.Optimal clinical pathway for the patient with type B acute aortic dissection.Circ J. 2009;73:264-8.

[12]. Kiyama T, Tajiri T, Yoshiyuki T, Mitsuhashi K, Ise Y, Mizutani T, Okuda T, Fujita I, Masuda G, Kato S, Matsukura N, Tokunaga A, Hasegawa S. Clinical significance of a standardized clinical pathway in gastrectomy patients.J Nippon Med Sch. 2003;70:263-9.

[13]. Preston SR, Markar SR, Baker CR, Soon Y, Singh S, Low DE.Impact of a multidisciplinary

standardized clinical pathway on perioperative outcomes in patients with oesophageal cancer.Br J Surg. 2013;100:105-12.

[14]. Soria-Aledo V, Mengual-Ballester M, Pellicer-Franco E, Carrillo-Alcaraz A, Cases-Baldó MJ, Carrasco-Prats M, Campillo-Soto A, Flores-Pastor B, Aguayo-Albasini JL.Evaluation of a clinical pathway to improve colorectal cancer outcomes. Am J Med Qual. 2011;26:396-404.

[15]. Seo HS, Song KY, Jeon HM, Park CH.The impact of an increased application of critical pathway for gastrectomy on the length of stay and cost.J Gastric Cancer. 2012;12:126-31.

[16]. Zhu L, Li J, Li XK, Feng JQ, Gao JM.Impact of a clinical pathway on hospital costs, length of stay and early outcomes after hepatectomy for hepatocellular carcinoma.Asian Pac J Cancer Prev. 2014;15:5389-93.

[17]. Zhang XD, Zhao QY, Fang Y, Chen GX, Zhang HF, Zhang WX, Yang XP. Perioperative comprehensive supportive care interventions for chinese patients with esophageal carcinoma: a prospective study.Asian Pac J Cancer Prev. 2013;14:7359-66.

[18]. Porter GA, Pisters PW, Mansyur C, Bisanz A, Reyna K, Stanford P, Lee JE, Evans DB.Cost and utilization impact of a clinical pathway for patients undergoing pancreaticoduodenectomy. Ann Surg Oncol. 2000;7:484-9.

[19]. Soria V, Pellicer E, Flores B, Carrasco M, Candel Maria F, Aguayo JL. Evaluation of the clinical pathway for laparoscopic cholecystectomy. Am Surg. 2005;71:40-5.

[20]. Soria V, Flores B, Candel MF. Evaluation and monitoring of the clinical pathway for thyroidectomy. Am Surg.2008;74:29-36.

[21]. Zhu L, Li J, Dong X, Liu X, Bao Z, Feng J, Yu Y, Zhang Y, Wang Z, Wang Z.Hospital costs and length of hospital stay for hepatectomy in patients with hepatocellular carcinoma:results of a prospective case series. Hepatogastroenterology. 2011;58:2052-7.

[22]. Lin DX, Li X, Ye QW, Lin F, Li LL, Zhang QY. Implementation of a fast-track clinical pathway decreases postoperative length of stay and hospital charges for liver resection.Cell Biochem Biophys. 2011;61:413-9.

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