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Association of Rituximab Treatment With Disability Progression Among Patients With Secondary Progressive Multiple Sclerosis

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IMPORTANCE Therapeutic options for patients with secondary progressive multiple sclerosis (SPMS) are limited.

OBJECTIVE To analyze disability progression in patients with SPMS treated with rituximab compared with matched control patients never treated with rituximab.

DESIGN, SETTING, AND PARTICIPANTS This retrospective cohort study analyzed data obtained from patients with SPMS at 3 multiple sclerosis centers located in Basel and Lugano, Switzerland, and Amsterdam, the Netherlands, from 2004 to 2017. Patients were included for analysis if they had received a diagnosis of SPMS, were treated (57 eligible; 54 included) or never treated (504 eligible; 59 included) with rituximab, and had at least 1 follow-up visit. The variables used for propensity score matching were sex, age, Expanded Disability Status Scale (EDSS) score, and disease duration. Follow-up duration was up to 10 years, with a mean (SD) of 3.5 (2.6) years for rituximab-treated patients and 5.4 (2.4) years for controls in the total cohort and a mean (SD) of 3.5 (2.7) years for rituximab-treated patients and 4.8 (2.2) years for controls in the matched cohort.

EXPOSURES Comparing EDSS score progression in patients with SPMS (treated with rituximab vs not treated with rituximab) using propensity score matching.

MAIN OUTCOMES AND MEASURES The primary end point was progression of EDSS score after baseline, and the secondary end point was time to confirmed disability progression.

RESULTS After 1:1 propensity score matching, 44 matched pairs (88 patients) were included in the analysis. At baseline, patients treated with rituximab had a mean (SD) age of 49.7 (10.0) years, mean (SD) disease duration of 18.2 (9.4) years, and mean (SD) EDSS score of 5.9 (1.4), and 26 (59%) were women, whereas controls had a mean (SD) age of 51.3 (7.4) years, mean (SD) disease duration of 19.4 (8.7) years, and mean (SD) EDSS score of 5.70 (1.29), and 27 (61%) were women. In the covariate-adjusted analysis of the matched set, patients with SPMS who were treated with rituximab had a significantly lower EDSS score during a mean (SD) follow-up of 3.5 (2.7) years (mean difference, −0.52; 95% CI, −0.79 to −0.26; $P < .001$). Time to confirmed disability progression was significantly delayed in the rituximab-treated group (hazard ratio, 0.49; 95% CI, 0.26-0.93; $P = .03$).

CONCLUSIONS AND RELEVANCE In this study, patients with SPMS treated with rituximab had a significantly lower EDSS score for up to 10 years of follow-up and a significantly delayed confirmed progression compared with matched controls, suggesting that B-cell depletion by rituximab may be therapeutically beneficial in these patients. A prospective randomized clinical trial with a better level of evidence is needed to confirm the efficacy of rituximab in such patients.

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Supplemental content

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RESEARCH

Association of delay of urgent or emergency surgery with mortality and use of health care resources: a propensity score–matched observational cohort study

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ABSTRACT

BACKGROUND: Delay of surgery for hip fracture is associated with increased risk of morbidity and mortality, but the effects of surgical delays on mortality and resource use in the context of other emergency surgeries is poorly described. Our objective was to measure the independent association between delay of emergency surgery and in-hospital mortality, length of stay and costs.

METHODS: We identified all adult patients who underwent emergency noncardiac surgery between January 2012 and October 2014 at a single tertiary care centre. Delay of surgery was defined as the time from surgical booking to operating room entry exceeding institutionally defined acceptable wait times, based on a standardized 5-level priority system that accounted for surgery type and indication. Patients with delayed surgery were matched to those without delay using propensity scores derived from variables that accounted for details of admission and the hospital stay, patient characteristics, physiologic instability, and surgical urgency and risk.

RESULTS: Of 15 160 patients, 2820 (18.6%) experienced a delay. The mortality rates were 4.9% (138/2820) for those with delay and 3.2% (391/12 340) for those without delay (odds ratio [OR] 1.59, 95% confidence interval [CI] 1.30–1.93). Within the propensity-matched cohort, delay was significantly associated with mortality (OR 1.56, 95% CI 1.18–2.06), increased length of stay (incident rate ratio 1.07, 95% CI 1.01–1.11) and higher total costs (incident rate ratio 1.06, 95% CI 1.01–1.11).

INTERPRETATION: Delayed operating room access for emergency surgery was associated with increased risk of in-hospital mortality, longer length of stay and higher costs. System issues appeared to underlie most delays and must be addressed to improve the outcomes of emergency surgery.

Patients undergoing emergency surgery are at high risk of adverse outcomes.[1] Although patient characteristics[2,3] and surgical indication[4,5] are the most important risk factors, system factors, such as delayed access to the operating room, also affect outcomes. In hip fracture surgery, delay is associated with morbidity and mortality,[6,7] but for other surgeries, the effect of delay on outcomes is unclear.[8–13] Because it is very expensive to expand or reorganize operating room resources to improve access,[14–16] understanding the relation between delay and outcomes for all types of emergency surgery is needed.

The association between surgical delay and outcome may be obscured by confounding. The indication for surgery, comorbidities and physiologic disturbances may influence both the risk of delay and the risk of adverse outcomes. Furthermore, ascertainment of delay is a challenge. Many studies measure surgical wait time as the time from admission to surgery, but this is misleading, because inpatient work-up is often required to determine the risks and potential benefits of surgery.

The purpose of this study was to determine the independent association of surgical delay with inpatient mortality, postoperative length of stay and total costs of hospital care.

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Analysis of Effects of Agriculture Intervention Using Propensity Score Matching

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Abstract

Nowadays, the agriculture extension programmes are practiced in many parts of the world. There is a mixture of results about the effects of agriculture intervention programmes. The literature shows that the interventions are ineffective and have limited diffusion. On the other side, it shows that interventions are effective. Following different arguments about the effects of agriculture extension, this paper adopted Propensity Score Matching (PSM) to analyze the effects of District Agricultural Sector Investment Project (DASIP) using agriculture data.

The study was conducted in rural Tanzania areas. It covered five regions namely Kagera, Mwanza, Mara, Simiyu and Kigoma. The study focused on agro-ecological zone where corn is cultivated. Two methods which are questionnaire administration and direct oral interview were used to collect primary data. The collection of data using the questionnaire was done from both participants (359) and non-participants (519). Before running the independent t test, the estimation of propensity score was done using Logistic regression. Thirteen confounding variables were used to estimate propensity scores.

The effects of the intervention were analysed by considering four items namely the earnings from corn production, value of livestock owned, value of household assets owned, and value of farm assets owned. The results show that none of the four factors had significant result as the p values are greater than 0.05. This implies that the earning between farmers participating in DASIP are not significant different from those who do not participate in the programme. The study recommends that the group activities should last longer rather than changing them from time to time.

Keywords: Agriculture Extension programme, DASIP, Farmer Field School, Intervention, Propensity Score Matching (PSM)

1. Introduction

The agriculture plays a major role in economic development (Yeshwanth, 2008). Nowadays, agriculture extension programmes are practiced in many parts of the world. Such programmes are implemented because farmers lack direct linkage with advanced agricultural technology. It is through extensions where farmers are given knowledge, skills and motivation for farming. These are done through Farmer Field Schools (FFS) also called Participatory Group Farmers (PGFs) model.

The FFS started in Tanzania in the 1997 (Braun et al., 2006). The approach has been engineered by both government and non-governmental organizations. The government of Tanzania adopted the FFS approach in one of its project called District Agricultural Sector Investment Project (DASIP) in which this paper is focused. The DASIP is a six year project aimed at increasing the productivity and incomes of rural households in the project area within the overall framework of the Agricultural Sector Development Strategy (ASDS). The DASIP started in the 2006.

One of the main challenges that the extension and research is currently confronted with is the transfer of agricultural technology from the research stations to the farm lands (Dinpanah et al., 2010). There is a mixture of results about the effects of agriculture intervention programmes. The literature shows that the interventions are ineffective and have limited diffusion (see Quizon et al., 2001; Feder et al., 2003; and Rola et al., 2002). On the other side, the literature shows that FFS are effective (see Godtland et al., 2004; Van den Berg., 2004; Feder et al., 2003; Tripp et al, 2005; Erickson, 2003; and Ooi et al, 2005).

There is less common rigorous impact evaluations of agricultural extension interventions despite the vast literature dealing with issues related to agricultural extension (Waddington et al., 2010). Heinrich et al. (2010) argue that this is a result of several problems accompanied by the evaluation of the programmes. The problems include: establishing the counterfactual; need for an adequate comparison group; selection bias; and role of randomization (Duflo and Kremer, 2003). These problems can be solved by the use of statistical methods depending on the nature of the intervention programmes. Unfortunately, the data used in the past impact analyses did not define well the counterfactual factors. The comparison is done by just looking at two observation points that is, before and after.

The intervention programmes can either be random or non-random. The randomized design

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Bariatric surgery is associated with reduction in non-alcoholic steatohepatitis and hepatocellular carcinoma: A propensity matched analysis

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ABSTRACT

Introduction: Obesity is a risk factor for non-alcoholic steatohepatitis (NASH) and hepatocellular carcinoma (HCC). Bariatric surgery can provide durable weight-loss, but little is known about the later development of NASH and HCC after surgery.

Methods: Bariatric surgery (n = 3,410) and obese controls (n = 46,873) from an institutional data repository were propensity score matched 1:1 by demographics, comorbidities, BMI, and socioeconomic factors. Comparisons were made through paired univariate analysis and conditional logistic regression.

Results: Total of 4,112 patients were well matched with no significant baseline differences except initial BMI (49.0 vs 48.2, $p = 0.04$). Bariatric group demonstrated fewer new-onset NASH (6 0.0% vs 10.3%, $p < 0.0001$) and HCC (0.05% vs 0.34%, $p = 0.03$) over a median follow-up of 7.1 years. After risk-adjustment, bariatric surgery was independently associated with reduced development of NASH (OR 0.52, $p < 0.0001$).

Conclusions: Bariatric surgery is associated with reduced incidence of NASH and HCC in this large propensity matched cohort. This further supports the use of bariatric surgery for morbidly obese patients to ameliorate NASH cirrhosis and development of HCC.

Introduction

Incidences of non-alcoholic steatohepatitis (NASH) and hepatocellular carcinoma (HCC) are increasing throughout the United States.[1,2] A large contributing factor may be the rise of obese adults, as this trend is increasingly affecting adolescents, as well. The progression of NASH from non-alcoholic fatty liver disease (NAFLD) occurs in approximately 10–25% of patients[3] and can lead to significant risks in liver-related mortality due to the development of hepatic fibrosis, cirrhosis, and hepatocellular carcinoma (HCC). It is projected that more than 10% weight loss is needed in order to improve NASH,[4] however, weight loss modification through lifestyle changes alone account for only 3–5% total body weight loss on average and does not provide durable weight loss over time.[5] Two first-line medications (Vitamin E and pioglitazone) have been used to augment this effect,[6] however there are concerns due their association with other cancers and morality risk, also in their lack of improving hepatic fibrosis.[7] Additionally, the effectiveness of these medications was only studied in non-diabetic patients which leaves limited options for the greater proportion of obese patients that are also diabetic.

Bariatric surgery has shown to provide sustained weight loss throughout the course of a patient's lifetime,[8] and most patients who are candidates for bariatric surgery have some degree of NAFLD.[6] Previous studies have shown that bariatric surgery not only improves steatosis in NASH, but may also improve hepatic fibrosis even in patients who may have other metabolic diseases including diabetes mellitus type II (DM2).[5,7,9,10] However, this was not a consistent finding since a few studies also showed worsening hepatic fibrosis over time.[5,7,9–11] It is due to this concern that despite guidelines suggesting the benefit of bariatric surgery in reducing the progression to NASH, there is still no definitive recommendation on its routine use.[6,11] This may, in part, have contributed to the overall decrease in the number of bariatric

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Differences in sexually transmitted infection risk comparing preexposure prophylaxis users and propensity score matched historical controls in a clinic setting

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Objective: The aim of this study was to determine whether MSM using preexposure prophylaxis (PrEP) are at a higher risk of bacterial sexually transmitted infections (STIs) than MSM not using PrEP.

Design: Secondary analysis of longitudinal STI data obtained from MSM attending an STD Clinic in Seattle, Washington, USA, October 2011–September 2017.

Methods: We identified patients obtaining PrEP through the STD Clinic, and used propensity score matching to select a historical group of similar patients not using PrEP for comparison. We linked patient data with STI surveillance data to compare the incidence of chlamydia, gonorrhoea and early syphilis, and time to first symptomatic STI among PrEP users and nonusers.

Results: Three hundred and sixty-five PrEP users who picked up prescriptions and returned for follow-up and 730 propensity score matched nonusers were included in the analysis. Adjusted incidence rate ratios (aIRRs) for chlamydia, gonorrhoea and early syphilis were 3.2 [95% confidence interval (95% CI): 1.9–5.3], 2.8 (95% CI: 1.7–4.6) and 2.9 (95% CI: 1.5 – 5.6), respectively, comparing PrEP users to nonusers. Time to first symptomatic STI was shorter among PrEP users (120 days, 95% CI: 77 – 171) than among nonusers (185 days, 95% CI: 163–256).

Conclusion: Among MSM on PrEP, we observed a higher incidence of STIs and faster time to first symptomatic STI than MSM not using PrEP. PrEP may be a contributing factor in increasing STI rates among MSM.

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Keywords: HIV, MSM, preexposure prophylaxis, sexually transmitted infections

Introduction

MSM are disproportionately impacted by HIV in the United States, accounting for 86% of new infections among men in 2016 [1]. Preexposure prophylaxis (PrEP) reduces the risk of HIV acquisition by up to 92% in MSM [2–4], is recommended by the Centers for Disease Control and Prevention (CDC) for HIV prevention among sexually active MSM [5] and is offered through a variety of clinical settings in the U.S. [6]. MSM are also

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