

Can we better protect patients with inflammatory bowel disease against infections – patient attitude and personal immunization knowledge

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Abstract

Background and Study Aims : Inflammatory bowel disease (IBD) predisposes patients to a severe course of infections yet adherence to vaccination guidelines is low. Little is known about IBD patient attitude towards immunizations. We aimed to investigate patient attitude towards vaccinations and its influence on personal immunization coverage.

Patients and Methods : A self-completed survey was completed by 195 IBD patients. The author-designed questionnaire comprised: demographic data, IBD medical history, vaccination history, reasons of influenza vaccine refusal, and the most reliable source of information about immunizations. Moreover, patients were asked if they agree with the statement that immunizations are beneficial for a person with IBD.

Results : 99 patients (50%) claimed that prevention of infectious diseases is beneficial for a person with IBD but this opinion had no influence on recommended vaccination uptake. There was suboptimal vaccination coverage : hepatitis B (55%); diphtheria, pertussis, tetanus (12%); hepatitis A (7%); annual influenza (6%); varicella-zoster (3%), and pneumococcal vaccine (2%). Top reasons for nonvaccination were: lack of information from a physician (47,5%), unawareness (35%), perceived lack of benefit (33%) and concerns about adverse events (26%). The most reliable source of information concerning immunizations was a gastroenterologist for the majority of IBD patients (58%) while more than 35% chose their general practitioner.

Conclusions : Active promotion and information regarding beneficial role of immunizations among IBD patients and other chronically ill individuals significantly improves the quality of care. It is important to explain misconceptions about vaccines by the most reliable sources. We propose implementing an uniformed “immunization chart” for every chronically ill individual. (*Acta gastroenterol. belg.*, 2018, 81, 257-261).

Keywords : Inflammatory bowel disease, vaccination, infectious diseases

Introduction

The number of people with chronic conditions is constantly increasing. About 2,5-3 million European residents are affected with inflammatory bowel diseases – complex, immune-mediated disorders of gastrointestinal tract with an onset usually in young adulthood, characterised by periods of exacerbations and remissions.(1) The medical problem stands not only in the disease itself but also in greater susceptibility to infections due to malnutrition or immunosuppressive treatment.(2,3) Immunocompromised state in IBD is defined in Table 1.(4) Vaccinations are an effective and safe method to decrease morbidity and mortality caused

by infectious diseases.(5) Patients with IBD should have an up-to-date immunization schedule, preferably at the time of IBD diagnosis, as they may be posed to immunosuppressive treatment in the future.(4,6) Of special importance are vaccinations against hepatitis B (HBV), *Streptococcus pneumoniae* and influenza because of an increased risk of severe course of those infections.(4) It is also important to remember that live vaccines (i.e. measles, mumps, rubella (MMR), *Bacillus Calmette-Guérin* (BCG), *Varicella-Zoster Virus* (VZV), rotaviruses, oral polio, intranasal influenza, and yellow fever) are contraindicated in immunocompromised individuals. Vaccination with inactive vaccines can be given safely for these patients, keeping in mind their immunogenicity and effectiveness may be impaired at this time.(7,8)

It has been shown that vaccination coverage in patients with chronic diseases is poor (rheumatologic, autoimmune, cardiovascular disorders).(9-11) One of the most efficient solutions in improving patient immunization status is health-care provider recommendation.(12) IBD care could be delivered by cooperation of gastroenterologists and general practitioners. According to the Stone's *et al.* study as many as 32% of IBD patients are under the care of their GP alone.(13) Moreover, patients often consider their GP as the most reliable source of information.(14,15) For optimal patient outcomes collaboration between specialists and primary health care physicians is required.

However, little is known concerning what are the real barriers in vaccine utilization by adult IBD patients and how well they know their own immunization history. In Poland all vaccines recommended for adult patients with IBD are self-funded.

In our study we aimed to investigate IBD patient awareness on the risk of infectious diseases and examine whether their attitude influences self-reported immunization coverage. Additionally, we identified what

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Submission date : 06/07/2017
Acceptance date : 19/02/2018

is the most reliable source of information about vaccines and what are the factors influencing immunization refusal.

Patients and methods

Study group

195 consecutive IBD patients admitted to the Department of Gastroenterology and Hepatology were included in our cross-sectional study. The clinic provides consultative inpatient care for patients with IBD for South-Western Poland. Patient characteristics are shown in Table 1. The University Ethics Committee approved the study. Written informed consent was signed by every participant before enrolment.

Study instrument

All patients completed an author-designed questionnaire comprising: demographic data, IBD medical history and vaccination history. In the second section patient attitude toward vaccination was examined. We asked whether a patient agreed with the statement that vaccinations are beneficial for a person with IBD (yes/no/ I do not have an opinion on the question). Moreover, patients were asked about reasons for influenza vaccine refusal and their main source of information about immunizations. There were multiple-choice questions with free space provided for additional answers. Randomly, patients completed the survey with a physician present to verify comprehension of the questions. In order to provide test-retest reliability a group of ten patients completed it twice.

Statistical analysis

Statistical analysis was performed using R Statistical Software (R Foundation for Statistical Computing, Vienna, Austria).(16)

The Fisher exact test was used to analyse non-random associations between two categorical variables while the Mann-Whitney-Wilcoxon test (MWW) was used for quantitative variables. The statistical difference was set with $p < 0.05$.

Results

1. IBD patients awareness of infectious diseases risk and its influence on vaccine uptake

99 of patients (50%) claimed that prevention of infectious diseases is beneficial for a person suffering from IBD. In our analysis this opinion had no influence on the recommended vaccination uptake (influenza, hepatitis B and pneumococcal vaccine). Also, other factors did not significantly change vaccination coverage which is shown in Table 3.

Personal immunization knowledge is presented in

Table 1. — **Definition of the Immunocompromised patient with inflammatory bowel disease (4, 17)**

High doses of corticosteroids (2 mg/kg body weight, or ≥ 20 mg/day of prednisolone) and within 3 months of stopping
Thiopurines
Methotrexate
Calcineurin inhibitors
Anti-tumor necrosis factor agents or other biologics malnutrition

Table 2. — **IBD patient characteristics**

N of patients (women/men)		195 (97/98)
Age, yrs: mean (SD; max, min)		37 (15; 16, 91)
CD/UC/indeterminate		79/109/7
Education	Primary	20
	Secondary	75
	University	93
Residency	Village	45
	Town population <100 000	64
	Town population > 100 000	48
IBD duration, yrs: mean (SD)		8 (6)
Past treatment	Corticosteroids	126
	6-mercaptopurine	4
	Azathioprine	78
	Methotrexate	3
	Cyclosporine	5
	Biological therapy	19
	Surgical treatment	34
Immunosuppressive treatment, overall		136

SD- standard deviation; CD- Crohn's disease; UC- ulcerative colitis

Figure 1. Fifteen (8%) patients were not sure if they had received any of the vaccines mentioned in the survey. Moreover, only four patients were vaccinated against *S.pneumoniae* and they did not provide their data about residency and education level. They were not included in subsequent statistical analysis.

2. Reasons for influenza vaccine refusal

58 (30%) reported at least one vaccination in the past, while only 13 (6%) patients receive influenza vaccine annually, 182 (93%) patients provided an answer regarding the lack of regular influenza vaccination. Top reasons for nonvaccination were: lack of information from a physician (47.5%), unawareness (35%), perceived lack of benefit (33%) and concerns about adverse events (26%).

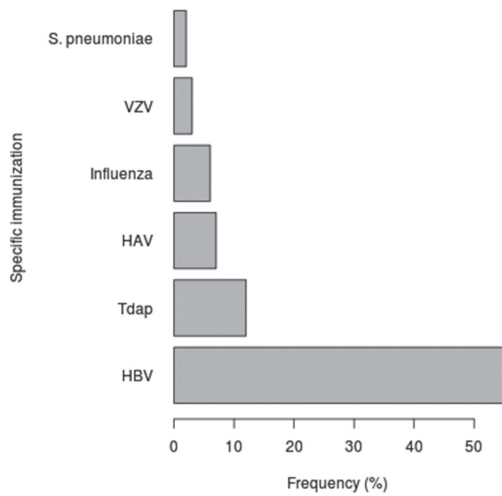


Figure 1. — Personal immunization knowledge of IBD patients dpT - diphtheria, pertussis, tetanus ; HBV - hepatitis B ; HAV - hepatitis A

3. Immunizations information sources

The most reliable source of information about immunizations was a gastroenterologist for the majority of IBD patients (58%) while more than 35% selected their GP. Only a few patients sought immunization information in medical journals (11%), the Internet (6%) and family/friends (3.5%).

Discussion

The European Crohn’s and Colitis Organisation and the American College of Gastroenterology emphasize the

importance up-to date vaccinations.(4,17) The Infectious Disease Society of America (IDSA) recommends an annual influenza vaccine, S.pneumoniae and hepatitis B vaccine for every chronically ill patient.(6) Our study demonstrated that i) patients with IBD are vaccinated sub-optimally ; ii) a significant number of IBD patients are not aware of their vaccination status iii) the majority of IBD patients believe that immunizations are helpful in maintaining their health yet it fails to increase the immunization coverage iv) patients have serious concerns regarding influenza vaccine safety and efficacy.

Similar poor vaccine utilization is observed in other chronic diseases, such as chronic rheumatologic or autoimmune disorders.(10) However, according to the MADIABETES study as many as 65.7% of patients with diabetes mellitus type 2 have been vaccinated against influenza in 2013 but only 23.3% had been vaccinated against pneumococcus.(18) We found the best coverage in HBV vaccine, whilst the uptake of other vaccines was very low, gradually decreasing: annual influenza, hepatitis A and pneumococcal vaccines. Nitsch-Osuch *et al.* recently have found a quite high influenza vaccine coverage among patients with chronic pulmonary diseases (58%) with respect to the general population (3.4%) and other chronic disorders (34 % in hemodialyzed, 32 % in cardiovascular, and 9 % in thyroid cancer patients). (11) In Poland vaccines recommended for an IBD patient are self-funded which may partially be cause of non-adherence to the advise of a physician. In some cases, physicians are accused by patients of seeking material benefit when recommending paid vaccines. Sometimes patients would rather undergo the infection, which in their opinion is mild in nature (as for example influenza), rather than spend money on a vaccine.

Additionally, as was also demonstrated by other Authors, patients have serious doubts in vaccine efficacy and safety profile, which is consistent with our results.

Table 3. — Factors influencing vaccination coverage of IBD patients

		Influenza			Hepatitis B			S.pneumoniae		
		yes	no	p-value	yes	no	p-value	yes	no	p-value
Patient attitude	Yes	34	65	0.44	55	44	0.12	4	95	0.28
	No	1	7		2	6		0	8	
	I do not have an opinion	21	50		44	27		0	71	
Education level	Primary	5	15	0.1	9	11	0.44	N/A		
	Secondary	19	56		41	34				
	University	37	56		56	37				
Residency	Village	9	36	0.18	22	23	0.41	N/A		
	Town<100 000	23	41		35	29				
	Town>100 000	16	32		30	18				
Past immunosuppression	Yes	46	89	0.24	80	55	0.09	2	133	0.59
	No	15	45		27	33		2	58	

(9) Moreover, even if they suffer from a chronic disease, IBD patients claim to be in a condition of good health and influenza vaccine is not necessary for them.(19) On the contrary, the majority of IBD patients believe that immunization is beneficial for them but this opinion does not improve vaccine uptake. There exists a large group of patients unsure about benefits of immunization. Further information provided by general practitioners and gastroenterologists may help in planning their optimal care.

The study performed by Walsh et al. showed a significant improvement in implementing ECCO guidelines when a proforma was used. A simple tool containing a check-box with a list of recommended vaccines and infectious diseases screening has changed the practice of gastroenterologists and improved awareness. However, the patient uptake rate for advised vaccinations was still low (40-65%).(20) As was shown in a few studies, responsibility falls on both sides: patient and physician. According to Yeung et al., gastroenterologists and IBD patients lack substantial knowledge regarding immunization.(21) Whilst in another study it was found that patient vaccination coverage is low even on biological treatment; moreover, older providers were less likely to recommend pneumococcal vaccination.(22) Another study performed in Belgium showed the relationship between patient educational level and vaccination rate. Moreover, the authors implemented a patient education program which significantly improved immunization status among IBD patients.(23)

Alarmingly, a significant proportion of patients do not know their vaccination history. It may suggest that practically they do not care about prevention of infectious diseases and it creates a problem in establishing immunization history based on anamnesis. As a consequence we propose implementing a uniformed "immunization chart" similar to a child vaccination booklet for a chronically ill individual. This solution would improve patient and physician awareness of infections prevention.

The patients indicated their immunization knowledge came mainly from gastroenterologists and family physicians. Very often family physicians are the main source of information for people with a long-term health condition.(9) Moreover, vaccinations in Poland are given in a general practitioners office. The importance of a physician's recommendation for uptake of influenza vaccine, has been highlighted in a parental survey of children with a chronic illness.(24)

Our research has some limitations: relatively small sample size and a one-center study. However, our Department has the biggest cohort of patients with Crohn's disease in Poland.(25)

In conclusion, we would like to emphasize the major role family physicians and gastroenterologists play in vaccination coverage. Active promotion and information among IBD patients and other chronically ill individuals significantly improves the quality of care. It is important

to explain misconceptions about vaccines by the most reliable sources.

Despite some limitations, our study is an important reminder of the deficiencies that continue to exist in adequately protecting the IBD population from vaccine-preventable diseases.

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