Pneumococcal and Influenza Vaccination in Hemodialysis Patients

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Introduction

Pneumococcus and influenza are common pathogens[1]. Hemodialysis patients are in a patient group at high risk of morbidity and mortality when infected by these organisms[2]. This and the substantial healthcare resources utilized to treat pneumococcal infections or influenza make preventative measures such as vaccination attractive. Vaccinations have been recommended by many authorities as a key strategy to reduce serious infections, antibiotic use, antibiotic resistance and overall cost of treatment in high risk patient groups[3].

Yet anecdotal reports suggest that despite the proven benefit and availability, many hemodialysis patients at our institution do not receive pneumococcal vaccine (PV) or influenza vaccine (FV).

The objective of the current investigation is to determine hemodialysis patient's recollection of vaccine administration and awareness of these vaccines availability and potential benefit.

Methods

From March 10th to March 28th thirty-seven patients (approximately 25 % of hemodialysis patients) at Royal Columbian Hospital, New Westminster, BC, were randomly chosen to answer a set of questions (Table 1.) regarding their knowledge of the potential benefit and availability of PV for renal patients and whether they could recall ever receiving PV. Patients were also asked if they received a FV in the past year. Hemodialysis patient kardexes were also reviewed for documentation of PV or FV administration.

Results

Patient demographics are described in Table 2. Most patients (84%) spoke English as a first language. Average time on dialysis was almost 2 years (22.4 months).

Based on patient self-report, only 14/37 (38%) hemodialysis patients surveyed reported that they had received PV. 24 patients (65%) stated that they had no knowledge that PV was recommended and available free of charge to renal patients. However, of these patients, 4 stated that they had received PV in the past . Of the 13 patients who knew the vaccine was available for renal patients, 10 /13 (77%) patients reported receiving PV.

Self-report of FV was higher: 21/37 (57%) reported receiving FV.

None of the patient kardexes contained documentation of FV or PV.

Discussion

There is clearly a lack of knowledge of the benefit and availability of PV and FV in the hemodialysis patients sampled at RCH. If the recall of vaccinations by patients surveyed accurately reflects the true incidence of vaccination, this group of patients is greatly under-immunized against these two potentially serious and preventable infectious diseases. It is beyond the scope of the current investigation to comment on factors such as age, sex or ethnicity on vaccination rates, although this may be an area requiring more study. To improve vaccination rates and vaccine documentation in this patient group, it would appear advisable to vaccinate patients with PV and FV in the hemodialysis unit, unless there was clear confirmation of vaccination at other sites (e.g. family doctor's office, public health clinic or community pharmacy clinic).

References

1. Mandel et al. Ed. Principles and Practice of Infectious Disease. 2001
2. BC Center for Disease Control. Vancouver. Jan 2001
3. Health Organization. Dept of Communicable Disease Surveillance and Response. Global Strategy for Containment of Antimicrobial Resistance. 2001

Footnotes:

1. University of BC, Faculty of Pharmaceutical Sciences. At the time of this study, Ms Fu and Mr. Dinglasan were fourth year pharmacy students.
2. Royal Columbian Hospital, Dept. of Pharmacy, New Westminster B.C. and clinical instructor, University of BC, Faculty of Pharmaceutical Sciences.

Table 1.

Hemodialysis patient questionnaire.

1. Introduction to patient as a pharmacy student on rotation in the kidney dialysis unit at RCH
2. Ask permission to ask questions regarding their immunization status.
3. Explain the purpose of the survey (to update patient information in order to optimize their health) and explain the current recommendations for patients with kidney disease to receive pneumococcal vaccines every 5 years and influenza vaccines yearly.
4. Have you ever received a pneumococcal vaccine ?
   If yes go to question 6.
   If no go to question 5.
5. Did you know that as of January 2001, the BC Ministry of Health made the pneumococcal vaccine available at no charge to persons with certain disease states including chronic renal disease?
6. Have you received a "Flu" vaccine in the past year?
   If yes go to question 8
   If no go to question 7
7. Is there any reason for not getting the "flu" vaccine? (e.g. allergy to eggs or preservative)

All patients were advised to see their doctor or local public health unit to obtain the vaccines if they wished to receive them.

Table 2.

Patient demographics

Male (%)	20 (54)
Mean age in years (range)	69 (43 – 87)
Ethnicity (%)	
Caucasian	22 (59)
East Indian	7 (19)
Asian	7 (19)
First Nations	1 (3)
English speaking (%)	31 (84)
Mean months on Dialysis (range)	22.4 (1-72)

Results of Hospital Survey of Enoxaparin Dosing for ESRD Patients

Submitted by Reshma Rathod, Lakeridge Health Corporation, Whitby, ON

An email survey for enoxaparin dosing in patients with renal insufficiency was sent to all members of the RPN in May 2003. Members from 16 institutions across the country responded. The results are presented below:

INSTITUTION	DOSING OF ENOXAPARIN IN PATIENTS WITH RENAL INSUFFICIENCY (Creatinine clearance less than 30ml/min)
Credit Valley Hospital, ON	No LMWH used in patients with CrCl <30ml/min
Trillium Health Centre, ON	Avoid use of LMWH in patients with CrCl <30ml/min
St. Michael's Hospital, ON	Avoid use of LMWH for CrCl <30ml/min If a LMWH is used, recommend dosing at 50% of the usual dose.
Toronto East General, ON	Enoxaparin used at a reduce interval (q24h)
University Health Network, ON	All patients with CrCl <30ml/min have Anti-Xa levels ordered and dosing interval of enoxaparin may be extended to q24h depending on Anti-Xa level.
Sunnybrook Health Sciences Centre, ON	Avoid using LMWH in patients with CrCl <30ml/min
William Osler Health Centre, ON Brampton Memorial Hospital Campus, ON	Do not use enoxaparin for patients with renal insufficiency
Grand River Hospital, ON	Enoxaparin is used at 1mg/kg sc once daily for treatment
Cite de la Sante de Laval, QC	Enoxaparin is used at 75% of the dose for CrCl <10ml/min and Anti-Xa levels are monitored.
University of Alberta Hospitals, AB	Enoxaparin 0.65mg/kg sc BID for CrCl <30ml/min. Lovenox 0.85mg/kg sc bid for CrCl 30-60ml/min
Jubilee Hospital , British Columbia, BC	LMWH of choice is nadroparin. For CrCl 20-30ml/min dose is reduced by 50% for treatment of DVT/PE. For Acute Coronary Syndrome, the interval is reduced to q24h. For CrCl <20ml/min UFH is recommended
Hôpital Dr Georges Dumont, NB	Avoid use of LMWH for CrCl <30ml/min. If enoxaparin is used, treatment dose is adjusted to 0.64mg/kg q12h and Anti-Xa levels are monitored.
Vancouver General Hospital, BC	Avoid use of LMWH for CrCl <30ml/min
Royal Columbian Hospital, BC	Avoid use of LMWH in patients with CrCl <30ml/min If enoxaparin is used recommend 1.5mg/kg sc q24h for CrCl >10-15ml/min. Avoid in patients with CrCl <10ml/min

The manufacturer for Lovenox® (Aventis) has released guidelines for enoxaparin dosing in renal patients as of March 2003. They are as follows:

For prophylaxis in conjunction with hip and knee orthopaedic surgery, the recommended dosage is 30mg sc once daily.

For prophylaxis in conjunction with abdominal or colorectal surgery, or for prophylaxis in medical patients at risk of deep vein thrombosis, the recommended dosage is 20mg once daily.

For treatment of deep vein thrombosis with or without pulmonary embolism a dosage of either 0.75mg/kg or 1mg/kg once daily is recommended.

For treatment of unstable angina and NQWMI the recommended dosage is 1mg/kg sc once daily.

Pertinent references that may be of interest are:

Collet JP et. al. Enoxaparin in unstable angina patients who would have been excluded from randomized pivotal trials. JACC 41(1): 8-14; 2003 Jan 1.

Kalus JS, Spencer AP. Enoxaparin should be used cautiously in patients with end-stage renal disease. Pharmacotherapy 2001; 21(8): 1015-1016.

Duplaga BA, Rivers CW et al. Dosing and monitoring of low molecular weight heparins in special population. Pharmacotherapy 2001; 218-34.

Brophy DF, Wazny LD et al. The pharmacokinetics of subcutaneous enoxaparin in end-stage renal disease. Pharmacotherapy 2001; 21(2): 169-74.