Impact of Vaccination History on Serological Testing in Pregnant Women

Michaël Desjardins, MD;[1,2] Isabelle Boucoiran, MD, MSc;[1,3] Caroline Paquet, SF, (BScS), MSc;[4] Céline Laferrière, MD;[1,4] Anne Gosselin-Brisson, MD;[5] Annie-Claude Labbé, MD;[1,6] Valérie Martel-Laferrière, MD, MSc[1,2,7]

[1]Faculté de médecine, Université de Montréal, Montréal, QC

[2]Centre hospitalier de l'Université de Montréal, Montréal, QC

[3]Centre hospitalier universitaire Sainte-Justine, Montréal, QC

[4]Département d'anatomie, Section Sage-femme, Université du Québec à Trois-Rivières, Trois-Rivières, QC

[5]Hôpital de St-Jérôme, Saint-Jérôme, QC

[6]Centre intégré universitaire de santé et de services sociaux de l'est-de-l'île-de-Montréal, Montréal, QC

[7]Centre de recherche du Centre hospitalier de l'Université de Montréal, Montréal, QC

Abstract

Objective: Serological testing guidelines for vaccine-preventable infectious diseases in pregnant women are heterogeneous. It is unclear how vaccination history influences health care workers' (HCWs) attitudes about testing. The aim of this study was to describe current practices in screening for rubella, hepatitis B, and varicella-zoster virus (VZV) in pregnant women in the province of Québec.

Methods: In 2015, an electronic survey was distributed to HCWs who followed the case of at least one pregnant woman in the previous year and who could be contacted by email by their professional association.

Results: A total of 363 of 1084 (33%) participants were included in the analysis: general practitioners (57%), obstetrician-gynaecologists (20%), midwives (41%), and nurse practitioners (31%). For rubella, 48% of participants inquired about vaccination status, and of these, 98% offered serological testing for unvaccinated women versus 44% for vaccinated women. Similarly, of the 48% of participants who asked about hepatitis B vaccination status before offering testing, 96% ordered testing for hepatitis B surface antigen, 28% ordered testing for hepatitis B surface antibody, and 1% ordered no serological testing to unvaccinated women versus 72%, 46%, and 8%, respectively, for vaccinated women. Among the 81% of respondents who discussed VZV during prenatal care, 13% ordered serological testing if patients had a history of VZV infection, 87% if the VZV history was uncertain, and 19% if patients had a positive history of vaccination.

Conclusion: Asking about vaccination status influences HCWs' attitudes about serological testing for rubella, hepatitis B, and VZV. In the context of increasing vaccination coverage in women of child-bearing age, it is important to clarify the impact of vaccination status in serological screening guidelines in pregnant women.

Key Words: Pregnancy, rubella, varicella-zoster, hepatitis B, vaccination

Corresponding Author: Dr. Michaël Desjardins, Centre hospitalier de l'Université de Montréal, Montréal, QC.
michael.desjardins.1@umontreal.ca

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Résumé

Objectif : Il existe un manque d'uniformité dans les lignes directrices sur le dépistage sérologique des maladies évitables par la vaccination chez les femmes enceintes. On ignore d'ailleurs l'influence des antécédents de vaccination sur l'attitude des professionnels de la santé envers le dépistage. Cette étude visait à décrire les pratiques courantes au Québec quant au dépistage de la rubéole, de l'hépatite B et du virus varicelle-zona (VZV) chez les femmes enceintes.

Méthodologie : En 2015, un sondage électronique a été envoyé aux professionnels ayant suivi au moins une femme enceinte au cours de l'année précédente et dont l'association professionnelle pouvait communiquer avec eux par courriel.

Résultats : En tout, 1 084 personnes ont reçu le sondage et 363 réponses (33 %) ont été obtenues. Celles-ci venaient d'omnipraticiens (taux de réponse : 57 %), d'obstétriciens-gynécologues (20 %), de sages-femmes (41 %) et d'infirmières praticiennes (31 %). En ce qui concerne la rubéole, 48 % des répondants s'étaient enquis du statut d'immunisation de leurs patientes; 98 % d'entre eux avaient offert un dépistage sérologique aux femmes non vaccinées et 44 % l'avaient offert aux femmes vaccinées. De même, 48 % des répondants s'étaient informés du statut d'immunisation quant à l'hépatite B; 96 % d'entre eux avaient demandé un test de détection de l'antigène de surface de l'hépatite B, 28 %, un test de détection des anticorps contre cet antigène et 1 % n'avaient demandé aucune épreuve sérologique pour les femmes non vaccinées. En comparaison, ces pourcentages étaient respectivement de 72 %, 46 % et 8 % pour les femmes vaccinées. En outre, parmi les 81 % des répondants qui avaient parlé de VZV avec leurs patientes enceintes, 13 % avaient demandé un dépistage sérologique en cas d'infection antérieure et 87 % en cas d'antécédents incertains, et 19 % l'avaient fait pour leurs patientes vaccinées.

Conclusion : Le fait de connaître le statut d'immunisation d'une patiente enceinte influence l'attitude des professionnels de la

santé quant au dépistage sérologique de la rubéole, de l'hépatite B et du VZV. De plus en plus de femmes en âge de procréer sont vaccinées; il est donc important que les lignes directrices sur le dépistage chez les femmes enceintes traitent du statut d'immunisation.

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INTRODUCTION

Rubella, hepatitis B, and varicella-zoster are viral infections requiring special attention during pregnancy. Infection could result in major consequences for both mother and fetus. For example, rubella leads to congenital defects, spontaneous abortion, and stillbirth.[1] Hepatitis B virus can be transmitted from the mother to the fetus during pregnancy. The risk of transmission is higher in women who are positive for hepatitis B envelope antigen, at 85% to 90%.[2] Varicella-zoster virus can also have major consequences: women are at increased risk of morbidity (e.g., pneumonitis) and mortality, whereas fetal complications include congenital varicella syndrome and neonatal varicella.[3]

Fortunately, these infections can be prevented by adequate immunization. Moreover, the risk of HBV transmission from mother to fetus can be reduced by administration of immunoglobulin and of HBV vaccines to newborns. For these reasons, prenatal care should aim to identify pregnant women either infected with HBV or non-immune to rubella or VZV. This status can be assessed with serological testing. However, guidelines on testing algorithms are heterogeneous in North America (Table 1). Now that significant proportions of women of child-bearing age have been vaccinated against these infections as a result of national immunization programs, it is unclear how vaccination history modifies health care workers' attitudes about serological testing.

ABBREVIATIONS

anti–HBs	hepatitis B surface antibody
CDC	Centers for Disease Control and Prevention
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
HCW	health care worker
MSSS	Ministère de la santé et des services sociaux du Québec
VZV	varicella-zoster virus

We conducted a cross-sectional study to describe current practices in screening for rubella virus, HBV, and VZV and to evaluate the impact of vaccination history on serological testing during pregnancy in the province of Québec.

METHOD

Settings

A Web-based questionnaire was distributed by email to HCWs involved in pregnancy care in Quebec. It aimed to assess providers' practice regarding prevention and screening of infectious diseases in pregnancy. This report focuses on results concerning serological testing of vaccine-preventable diseases. The study protocol was approved by the Ethics Committee of the Centre Hospitalier de l'Université de Montréal. The primary objective was to describe current practices in screening for rubella virus, HBV, and VZV in pregnant women in the province of Quebec.

Participants

Participants had to be general practitioners, obstetrician-gynaecologists, registered midwives, or nurse practitioners from Quebec who followed the case of at least one pregnant woman in the year before the survey. An email, including a description of the project and a link to the questionnaire, was sent to every member of the Association des omnipraticiens en périnatalité du Québec (250 members), the Association des obstétriciens et gynécologues du Québec (498 members), and the Ordre des sages-femmes du Québec (186 members). A convenience sample was created with the nurse practitioners who could be reached by the Association des omnipraticiens en périnatalité du Québec (n = 150). The first question of the survey was used as a consent form that described the objectives of the study and the confidentiality policy. Answers to the questionnaire were anonymous, with the exception of voluntary participation in a drawing for a $50 gift card, for which we collected email addresses. Before analysis, data were anonymized.

Survey

The questionnaire was designed with the collaboration of members of each profession who were involved in the redaction of questions, with the exception of nurse practitioners. Of 59 questions, 14 were about screening for HBV, rubella virus, and VZV. The questionnaire, administered through the Web-based platform SurveyMonkey,[4] was first sent on January 15, 2015. Email reminders were sent 2 and 3 weeks later. Data collection ended on February 15, 2015. Proportions were used for descriptive statistics.

RESULTS

Among the 1084 HCWs contacted, 400 (37%) answered the survey. Thirty-seven were excluded: four did not consent,