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Active surveillance cultures: comparison of inguinal and rectal sites for detection of multidrug-resistant bacteria

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SUMMARY

Background: Rectal swabs are the most widely used surveillance technique for detecting multidrug-resistant bacteria colonizing the intestinal tract. Obtaining these samples may cause embarrassment and discomfort to patients. Prior studies indicate that perirectal swabs are as sensitive and specific as rectal swabs with greater patient acceptance.
Aim: To compare inguinal and rectal swabs for the detection of multidrug-resistant bacteria colonizing the intestinal tract.
Methods: An epidemiological, comparative, prospective, and controlled study was undertaken with 102 Brazilian patients. Inguinal and rectal swabs were collected for culture and compared.
Findings: Compared to rectal swabs, the sensitivity and specificity of inguinal swabs was 91.8% and 88.7%, respectively. Even when there were low colony counts from rectal samples, there were more than 100 colonies from inguinal samples.
Conclusion: The inguinal region can be considered an acceptable alternative for collecting surveillance cultures for multidrug-resistant bacteria colonizing the intestinal tract. The inguinal swab technique is sensitive and specific for assessing multidrug-resistant microorganisms, less embarrassing for patients, and simple to implement in hospital practice.

Introduction

Active surveillance is considered an important component of control programmes for multidrug-resistant bacteria (MDRB) allowing early detection of emerging pathogens, monitoring of epidemiological trends, and verification of the effectiveness of control interventions.[1,2] Routine surveillance culture collection is considered the most sensitive approach for identifying patients colonized with MDRB.[1–4]

Surveillance data provide information on individual patients as well as the epidemiological profile of the hospital ward.[5] This information can be used to decide upon the adoption of contact precautions and other interventions to limit the spread of MDRB, thus avoiding unnecessary patient exposure.[2–12]

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As the gastrointestinal tract is an important bacterial reservoir, surveillance cultures are considered an essential tool for preventing the spread of bacteria within the hospital environment.[9,13,14] Rectal swab collection is a widely used technique; however, many patients undergo weekly collections for long periods that could cause embarrassment and discomfort.[15–17] Some studies indicate that perirectal swabs are as sensitive and precise as rectal swabs but with greater patient acceptance.[15,18,19]

As the inguinal site is naturally warm and moist and is in anatomical proximity to the intestinal tract, we hypothesize that swabs from this site have similar sensitivity and specificity as rectal swabs for the detection of bacteria colonizing the intestinal tract.[20] Accordingly, this study compared swabs of the inguinal and rectal sites for detection of intestinal colonization by MDRB.

Methods

Study setting and design

This was an epidemiological, comparative, prospective, and controlled study to compare the sensitivity and specificity of inguinal swabs to rectal swabs for the detection of MDRB. It was conducted from October 2012 to May 2013 in a 635-bed tertiary care centre in Curitiba, in southern Brazil. The study was approved by the Research Ethics Committee and complied with the ethical aspects of human research.

Case–control study

The sample size was determined on the basis of the results of a pilot study conducted with 60 participants, considering a margin of error of 10%. The final sample consisted of 150 participants. Demographic and hospitalization data were collected.

The inclusion criteria were as follows: (i) hospitalization regardless of age, sex, underlying illness, or time of hospitalization; (ii) positive results for MDRB from rectal swabs (during the study period) that were routinely obtained as part of standard care. This involved collecting a rectal swab when patients were admitted from other health institutions or transferred from intensive care units or emergency services. Swabs were also collected from patients who had had contact with other patients colonized by MDRB, and weekly from patients admitted to intensive and semi-intensive care units, and haematology/oncology units.

Patients who tested positive for MDRB from rectal swabs were prospectively included in the colonized group. For each participant in the colonized group, another patient was recruited to the control group whose colonization condition was unknown or who had a negative rectal swab collected in routine hospital surveillance. These patients were hospitalized in the same hospital and matched for sex, age, underlying disease, and hospitalization. Patients with discordant results between two inguinal swab cultures were excluded, to prevent favouring the inguinal swabs over the rectal swabs.

Microbiological study

Patient epidemiological and hospitalization data were collected in addition to two inguinal swabs and one rectal swab on consecutive days. The rectal swab was collected concurrently with one inguinal swab. The inguinal swabs were collected before daily baths to avoid interfering with the recovery of pathogens. As there is no standard for collection of inguinal swabs, a technique was developed for this study as follows. With the patient in the supine position, sampling was

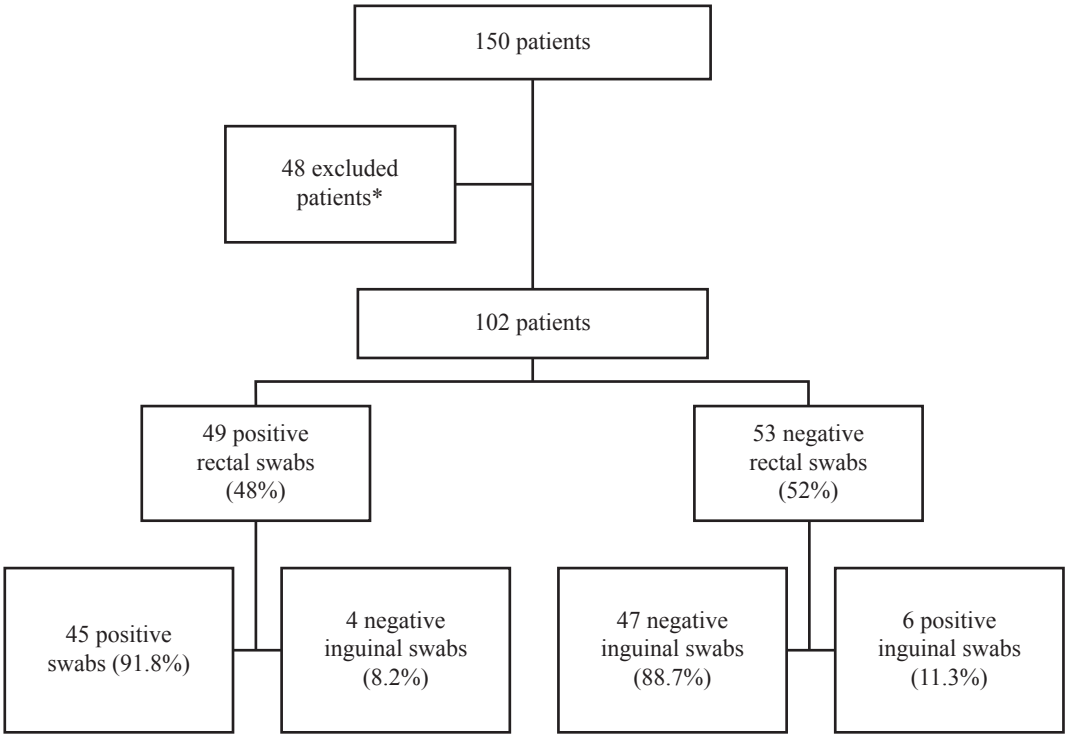

Figure 1. Frequencies of positive and negative rectal and inguinal swabs. *Patients with discordant inguinal swab results.