P0830

Incidence and prevention of multidrug-resistant and virulent microorganisms in Greenland

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Introduction

The health care system in Greenland signed a contract with National Center for Infection Control in 1998 concerning guidance on infection control and prevention. A hygiene committee has been established, health care workers have been educated as key personnel in hygiene, and guidelines for infection control and prevention have been made. A laboratory surveillance system of multidrug resistant and virulent microorganisms was established in 2000 but a systematic review of the patients with these microorganisms has not been done.

Objectives

To review the records of all patients with multidrug resistant and virulent microorganisms in the period 2000 to 2014 in order to learn more about risk factors for becoming carriers with these microorganisms and the compliance to guidelines for infection control and prevention in Greenland.

Methods

Review of the surveillance database and a systematic review of records from colonized and infected patients were performed in order to identify epidemiology, etiology, compliance to standard and isolation precautions, antibiotic treatment and routine screening. Data on consumption of antimicrobial agents were provided by the National Pharmacy at Dronning Ingrids Hospital.

Results

Patients colonized or infected with multidrug resistant/virulent microorganisms from 2000-2014: 16 patients with MRSA ➢ 49 patients with ESBL-producing Enterobacteriaceae > 104 patients with *Clostridium difficile*, 45 of these with the 027 type **Risk factors**: immunosuppression, prior antibiotic treatment, surgical procedures, foreign bodies, admission to a hospital abroad. Since 2011 there has been an increasing problem with *C. difficile* infections (mainly type 027) in the hospitals and transmission within the country has occurred. A project focusing on identification of risk factors, mapping of *C. difficile* types and prevention strategies is planned for the near future.

> MRSA



All antimicrobial agents in Greenland are purchased and disseminated from the National Pharmacy. The figures show the total purchase of selected antimicrobial agents in DDD per 1,000 inhabitant days from 2007 to 2014. From 2007 to 2013 an increase of narrow-spectrum penicillins (18 %) and broad-spectrum penicillins (12 %) has been seen, but from 2013 to 2014 decreases have occurred (23 % and 4 % respectively). From 2013 to 2014 an increase in broad-spectrum antimicrobial agents such as macrolides (4 %), tetracyclines (5 %), fluoroquinolones (19 %), and cephalosporins (16 %) has been seen. Meropenem has decreased with 19 % from 2013 to 2014. From 2012 to 2014 piperacillin-tazobactam has increased with 42 %.





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Conclusions

- > During the last few years there has been an increasing number of multidrug resistant and virulent microorganisms in Greenland.
- The increase in multidrug resistance can be explained by well known factors such as:
- import from abroad (mainly Denmark)
- probable transmission in Greenland
- increased consumption of broadspectrum antimicrobial agents as cephalosporins and fluoroquinolones.
- Frequent change in workforce and hospitalization abroad are challenges for maintaining a restrictive antibiotic policy.
- > An ongoing surveillance, a rational use of antimicrobial agents, compliance to screening procedures and compliance to guidelines for infection control and prevention are necessary in order to combat antibiotic resistance in Greenland in the future.

