Case Report - Stronglyloides

Contributed by Dr. K. Katz, ID Resident

A 61 year old male, born in Cambodia, presented to a community hospital complaining of nausea, vomiting and mild hip pain. He was noted to have a creatinine of 307 u/L. He was diagnosed with acute renal failure due to hypovolemia and acute tubular necrosis and treated with hydration and supportive care. An abdominal ultrasound did not reveal any ureteric obstruction.

Three days after admission, he became hypotensive (70/50), febrile and was noted to have a decreased level of mentation. A septic work-up was initiated including blood cultures and urine culture. The blood cultures grew *E. coli*. He was treated with ciprofloxacin and ceftriaxone as well as vasopressors in the intensive care unit.

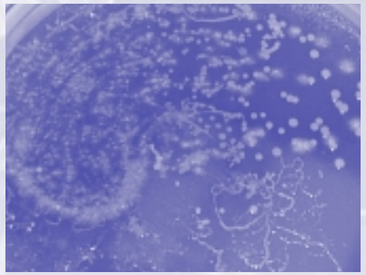


Figure 1. Blood agar sputum plates.

Over the subsequent days, his course was complicated by the development of atrial fibrillation and worsening respiratory status. Intubation and mechanical ventilation was required for ventilatory and oxygenation support. A bronchoscopy revealed copious secretions and grew commensal flora. He was transferred to a tertiary care institution when oxygenation requirements reached 100% FiO2, and he was noted to have a loculated pleural effusion and possible pneumomediastinum.

His past medical history is significant for type 2 diabetes mellitus and mild chronic renal failure. He also has a past medical history of arthritis for which he was treated with low dose steroids and non-steroidal anti-inflammatory medication.

His medications at the time of admission consisted of prednisone 5 mg daily (for the last 4 years), insulin, and ranitidine.

He had traveled to mainland China approximately five months prior to this hospital admission.

Upon arrival at the hospital, a full septic work-up was re-initiated. Blood and urine cultures were sterile. The sputum gram stain revealed *Strongyloides stercolralis* rhabtidiform larvae. The blood agar sputum plates demonstrated serpiginous streaking of bacteria (figure 1).

Health Canada Protection Branch was contacted and the patient was initiated on 150-200 microgram/Kg of ivermectin daily as well as albendazole 400mg bid for a minimum of 5 days.

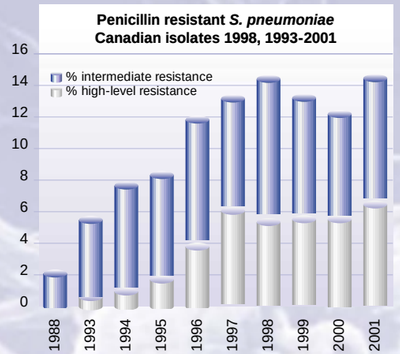
MicroWeb

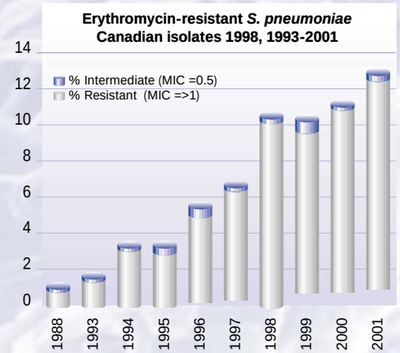
Current CBSN susceptibility and trend data are available on the internet for easy access. The *S. pneumoniae* data base can be queried directly on line. Obtain your own password by completing the request form on the website at http://microbiology.mtsinai.on.ca.
We welcome suggestions or comments at microweb@mtsinai.on.ca.
Thank you all once again for your continued collaboration and support.
Donald E. Low for the Canadian Bacterial Surveillance Network.

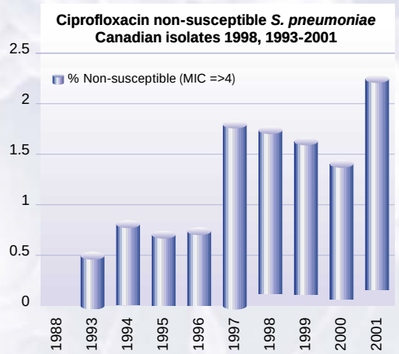
This newsletter is a publication of the Canadian Bacterial Surveillance Network (CBSN), a collaboration of microbiology laboratories from across Canada.

This newsletter has been generously sponsored by an unrestricted educational grant from Bayer Healthcare Division.

Trends in Antimicrobial Resistance in Canadian isolates of *S. pneumoniae*, 1988, 1993-2001







Canadian Bacterial Surveillance Network

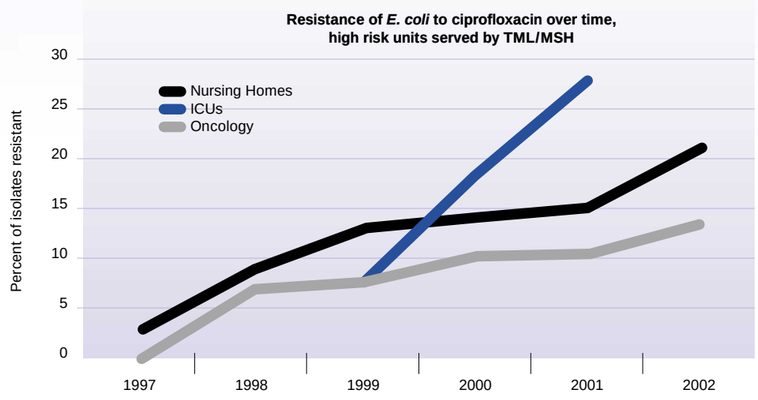
Issue 1, May 2002

Emerging quinolone resistance - not only in *S. pneumoniae*

Contributed by Dr. Allison McGeer

We (and others) have focused considerable attention on the emerging problem of quinolone resistance in *S. pneumoniae*, because of the risk of treatment failure in patients with community-acquired pneumonia. It is important, however, to remember that DNA gyrases and topoisomerases, the cellular targets of quinolones, are quite highly conserved across bacterial species, and resistance is emerging in a number of other species of bacteria as well. Quinolone resistance is becoming a problem in viridans group streptococci, which cause bacteremia after organ transplant and cancer chemotherapy, and a case of severe pneumonia due to a *S. pyogenes* resistant to levofloxacin has recently been identified in Canada. This latter case was only detected because of failure of levofloxacin therapy.

Equally important, resistance to fluoroquinolones is emerging in gram negative bacteria. Although we have always recognized the problem in *P. aeruginosa*, isolates of *E. coli* are now increasingly likely to be ciprofloxacin resistant. This is most likely to occur in populations receiving fluoroquinolone therapy - those in intensive care units, oncology units, and nursing homes. The figure below shows rates of resistance of *E coli* to ciprofloxacin in a nursing home, an ICU and an oncology unit served by the TML/MSH microbiology laboratory. Laboratories serving these types of patients, and physicians caring for them, should be cognizant of the increasing likelihood that isolates in these patients may be resistant to quinolone antibiotics, and that serious infections should not be treated with monotherapy.



Inside this issue

CBSN Study Office – Mount Sinai Hospital
600 University Avenue, Room 1460
Toronto, Ontario, M5G 1X5

Phone: (416) 586-3144
1-800-668-6292
Fax: (416) 586-3140

Thank you CBSN Participants, Investigators, Collaborators, and Sponsors.

The Canadian Bacterial Surveillance Network continues to thrive due to your tremendous efforts. Canadian data on the epidemiology and mechanisms of resistance are being used by investigators, collaborators and clinicians across the country to make laboratory and clinical decisions. The internet-based *S. pneumoniae* data base is being accessed regularly by colleagues all over the world. (http://microbiology.mtsinai.on.ca) and information from the network is regularly shared through presentations at meetings and publications in appropriate journals. Through additional sponsorship, our CBSN newsletter takes on a new look this year. We would appreciate any comments, suggestions or articles for the next issue.

CBSN
Canadian Bacterial Surveillance Network

MRSA and VRE – the Ontario experience

(adapted with permission from QMP-LS News #32, April 30, 2002)

Contributed by Karen Green, RN, CIC

Since 1995, most hospitals in Ontario experienced a significant increase in the number of patients with MRSA and VRE and the frequency of nosocomial transmission of these organisms. Ontario hospitals have been implementing screening and control protocols to minimize the spread of these organisms. Recommendations have included criteria for screening on admission anyone who has had an overnight stay in a hospital or nursing home in the 6 months prior to admission.

The Quality Management Program – Laboratory Services (formerly the Laboratory Proficiency Testing Program) has conducted a series of annual questionnaire surveys to assess changes in the incidence of MRSA and VRE and the effect of these control programs.

MRSA

Since 1996, the majority of patients affected by MRSA in the province are colonized or infected by the strain of MRSA now known as C-MRSA1, or Canadian epidemic MRSA strain #1 (1,2). Recently, however, the number of isolates of C-MRSA2 and C-MRSA5 appear to be increasing.

In 2001, 96 of the 102 private and hospital microbiology laboratories serving Ontario hospitals identified a total of 7,684 patients colonized or infected with MRSA (median: 26, range 1-751). Five laboratories that serve individual hospitals in northern Ontario, and one small hospital laboratory in the southwest did not identify any MRSA.

Figure 1: Number of patients colonized or infected with MRSA in Ontario, 1992 to 2001.

For the first time since 1992, the total number of patients affected by MRSA decreased in Ontario: a decrease of 18% between 2000 and 2001 (see Figure 1).

A site of acquisition of the MRSA was identified for 56% of patients. For those patients whose site of acquisition could be defined, 76% (3282/4300) had hospital-acquired MRSA, 14% (592/4300) acquired MRSA in a nursing home, and 10% (426/4300) were thought to have acquired MRSA in the community.

The percentage of patients infected (as opposed to colonized) with MRSA was 32% (2604/6309), stable compared to 2000 (32%, 1756/5559), but still significantly higher than the 24% in 1999 (1107/4530) and 21% (927/4416) in 1998. The number of reported MRSA bacteremias increased slightly from 135 in 1998, 144 in 1999, and 184 in 2000 to 189 in 2001.

Data on screening programs were reported for 212 hospitals. All reported having an admission screening program for MRSA, and 93% (198/212) reported an admission screening program consistent with current Ontario recommendations: that is, screening patients who have been in a health care institution (hospital or nursing home) within the past six months.

It appears that MRSA control programs in Ontario hospitals are beginning to succeed in reducing the total burden of MRSA. Over the last year, the total number of both colonized and infected patients has decreased significantly, suggesting that continued effort will result in control of this expensive and dangerous pathogen. Two issues of concern, however, have recently arisen. The first is increasing antibiotic resistance within MRSA. Although there is no overall surveillance for this, it is clear that mupirocin resistance is becoming increasingly common in some hospitals. In addition, at least one hospital in southern Ontario has a current outbreak of a co-trimoxazole, tetracycline, rifampin and mupirocin resistant MRSA strain. A second concern is that a few Ontario hospitals have recently reported transmission of mannitol-negative MRSA strains. If these become more common in Ontario, changes to laboratory processing of MRSA screening swabs will need to change to ensure the detection of non-mannitol-fermenting strains.

VRE

In 2001, the incidence of VRE continued to decrease in Ontario, with only 237 patients reported as colonized province wide. This represents a 47% decrease from 2000, and a 65% decrease from 1999 (Figure 2). Only 9 infections were identified (4% of all colonized patients), and only 1 patient was bacteremic (compared to 20 infected patients with one bacteremia in 2000). Most patients (91%) were judged to have acquired their VRE in acute care hospitals (61% in the hospital reporting the patient, 30% in another hospital); 4% were thought to have acquired VRE in a nursing home, and 5% in the community. 95% of hospitals reported one or more screening strategies for VRE. The species of enterococcus was reported for 201 of 237 VRE: 181 (90%) were *E. faecium*, and 20 (10%) were *E. faecalis*.

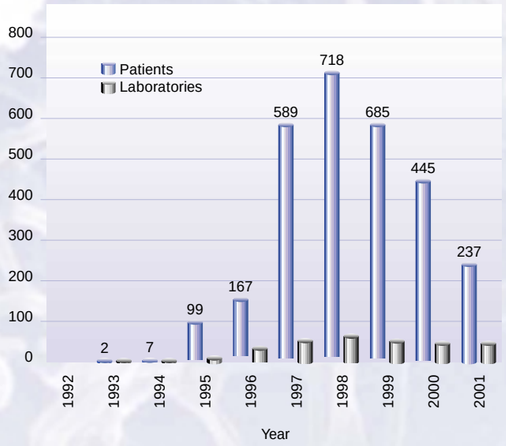


Figure 2: Incidence of VRE in Ontario, 1992 to 2001. Blue bars represent the number of new patients colonized or infected with VRE in each year; black bars, the number of microbiology laboratories reporting the isolation of at least one VRE isolate.

Contamination of the lab and specimens with VRE occurs relatively frequently. Use of quality control strains that are VR *E.faecium* or *E. faecalis* (as opposed to *E. casseliflavus*) has led to contamination of clinical specimens in Ontario on at least 13 occasions since 1996. When a VR *E. faecalis* is identified in any laboratory, it is important to check on the control strain in use, and to be sure that the isolate is not a result of laboratory contamination (3,4).

After six years with increasing numbers of cases, infection control programs in Ontario are finally reducing transmission of both MRSA and VRE. The more rapid decrease in VRE is likely because the response occurred earlier in the epidemic, and screening and control measures during outbreaks have been more aggressive. The continuing decrease in the number of identified cases of VRE in Ontario is a dramatic contrast to the history of VRE in the United States (6,7). However, the decrease in screening programs needs to be carefully assessed as VRE can be introduced and spread quite rapidly as evidenced by a current multi-hospital outbreak in the greater Toronto area.

The first decrease in MRSA incidence in Ontario in the past decade is cause for celebration. MRSA infections are expensive to treat, and associated with significantly greater morbidity and mortality than infections due to susceptible *S. aureus* (8). In addition, preventing MRSA is the most effective means of preventing VISA, since VISA strains are all derived from MRSA strains. The continued emphasis on control programs will allow Ontario to follow in Denmark's footsteps, and reduce MRSA rates to below 1% across the province (9). Reassuringly, some areas of the United States are now following this lead, and are recommending screening and transmission control programs (10,11) .

References

1. Simor et al. Can Commun Dis Rep 1999;25: 105-8.
2. Simor et al. CMAJ 2001;165:21-6.
3. Collins et al. J Clin Microbiol 2001;39:3772-4. Willey et al. Abstract #2106, 39th Interscience Conference on Antimicrobial Agents and Chemotherapy, San Francisco, California, September 26-9, 1999.
5. Itokazu et al. Clin Infect Dis 1996;23:779-84.
6. Martone et al. Infect.Control.Hosp.Epidemiol 1998;19:539-545.
7. NNIS System Report, Data Summary from January 1992 - April 2000. Am J Infect Control 2000;28:429-48.
8. Whitby et al. Med J Aust 2001;175:264-7.
9. Westh et al. Clin Infect Dis 1992;14:1186-94.
10. Arnold et al. Infect Control Hosp Epidemiol 2002;23:69-78.
11. Farr et al.Infect Control Hosp Epidemiol 2002;23:65-68.