Transmission of Nonfermenting Gram-Negative Bacilli by Multiple-Dose Inhalers

The description by Cheron et al. (1) of an outbreak of hospital-acquired infections due to *Alcaligenes denitrificans* and other nonfermenting gram-negative bacilli was reminiscent of a similar outbreak at our hospital. During a 1-month period there were 11 cases of mixed bacterial infections involving *Acinetobacter anitratus*, *Flavobacterium meningosepticum*, and *Xanthomonas maltophilia* in our 15-bed intensive care unit. Tracheal secretions from each of these patients yielded two or more of the above organisms on at least two different days. Prior to this outbreak, one to three patients on this unit were colonized each month.

While attempting to identify the source of these organisms, we were surprised to learn that multiple-dose inhalers (MDIs), which are inserted into ventilator tubing to administer medications, were being used from patient to patient. Although it was departmental policy that these inhalers be cleaned with alcohol between patients, this was not always done. Culture of one of the six in-use MDIs grew *A. anitratus* and *X. maltophilia* with the same susceptibility patterns as the patient isolates.

We decided to provide each patient with an inhaler and instructed hospital staff that these devices should not be shared. The colonization rate of nonfermenting gram-negative rods rapidly returned to the preoutbreak level.

We do not know how widespread this practice of sharing MDIs is, but we want to make other hospital epidemiologists aware of our experience.

A Case of Conversion from MT-2-Positive to MT-2-Negative Phenotype

Several authors have demonstrated that human immunodeficiency virus type 1 (HIV-1) may be classified as syncytium inducing (SI) or non-syncytium inducing (NSI) and that the presence of SI variants correlates with a rapid CD4+ lymphocyte decline (1,4). Recently Karlsson and colleagues (2) reported results according to the previous commentaries. These authors also described one patient with a fluctuating virus phenotype. It is known that most SI isolates replicate in MT-2 cells, whereas most NSI isolates lack this capacity (3).

We report a similar case in the context of a pilot study with a small group of HIV-positive patients with CD4 counts of <250/mm³. All patients had not undergone antiretroviral therapy and were followed up for 6 months. Patients received 200 mg of zidovudine (ZDV) every 8 h during the study. We characterized the genotypic and phenotypic properties of HIV-1 strains. SI and NSI phenotype, ZDV susceptibilities (50% inhibitory concentrations [IC₅₀]), and codon 215 sequences of the pol gene were analyzed at baseline and after 6 months of therapy.

We monitored one patient who switched his MT-2 tropism from SI at baseline to NSI after 16 weeks, and although he continued to be asymptomatic, his CD4 cell count declined from 40 to 2/mm³. An RT mutation in the 215 position appeared at the same interval, and the ZDV IC₅₀ was >1 μM. The other patients did not show changes in their HIV-1 phenotype during the same period, and the 215 mutation was observed with only one additional patient.

We use our observation and that of Karlsson et al. (2) to point out that a single determination of MT-2 tropism may be, in some cases, misleading and that repeated determinations every 3 months could be even more useful as a prognostic factor.

Although a patient with a fluctuating phenotype is apparently rare and this situation may reflect an isolation of a quasispecies not representative of the majority, it is important to be aware of this possibility whenever we plan to use NSI-SI phenotype as an entry criterion for any antiretroviral study.

Even if the reversion from NSI to SI is transitory our findings and those of Karlsson et al. (2) argue for a need for at least two determinations, with a 3-month interval, in order to assure the stability of the phenotypic results observed.

REFERENCES


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