

ANALYSIS OF LEVOFLOXACIN USE IN GERIATRIC UNITS AT A UNIVERSITY HOSPITAL

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Background

Overuse of antibiotics, such as fluoroquinolones (FQ) and third-generation cephalosporins, is a major cause of extended spectrum beta lactamase (ESBL) producing enterobacteriaceae emergence.

This problem conducted the French Public Health Council to publish recommendations to avoid the ESBL emergence and their dissemination (1).

In parallel, FQ can also be responsible of clinical adverse effects such as confusion, epileptic seizure or cardiac arrhythmia which often occur in elderly people.

Purpose

Due to a wide usage of FQ in elderly inpatients, and specially levofloxacin which is the most given, we investigated the conditions in which this drug was prescribed.

Results (1)

87 patients had a levofloxacin prescription :

- 55% for community acquired pneumonia
- 20% for nursing associated pneumonia
- 16% for nosocomial pneumonia
- 9% for others indications

77% of the patients had previously received another antibiotic :

- 47 amoxicillin clavulanate
- 20 ceftriaxone

Among patients without any signs of gravity (n = 79) such as tachycardia, tachypnea or hypotension, 1 in every 2 received levofloxacin associated to ceftriaxone, although this association is only for intensive care patients according to the French Society of Infectious Diseases.

For 20% of the patients, levofloxacin was ineffective and another line of antibiotic was prescribed. Levofloxacin therapy was also interrupted for 3 patients who had adverse events (confusion and epileptic seizure).

Materials and Methods

In the geriatric wards of Toulouse University Hospital, from 1st January to 31st March 2012, informations on every new levofloxacin prescription were recorded: indication, dosage, duration, patient's medical history, renal function, and previous antibiotic.

In parallel, levofloxacin consumption was assessed and expressed in terms of the number of Defined Daily Doses (DDD) per 1000 patient-days (PD).

The DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults. It is a unit of measurement enabling to perform comparisons between population groups (2).

The levofloxacin consumption was then compared with the data from the French antibiotic network "RAISIN" (3).

Results (2)

Mean duration of treatment : 10 days.

In 1 of every 2 cases, dosage was too high according to the renal function.

As a result, the exposure to levofloxacin is 49 DDD per 1000 PD in acute-care units, and 37 DDD per 1000 PD in skilled units. These results are 4 to 7 times higher than those registered in the "RAISIN" network.

	Exposure (DDD per 1000 PD)
Acute care Units	49
« RAISIN » network	12
Skilled Units	37
« RAISIN » network	5

Discussion - Conclusion

Among the 80 patients with pneumonia, 72 had no sign of gravity or stay in intensive care units. That means that first choice antibiotic was amoxicillin clavulanate. It was the case for 42 patients, but 30 of them received levofloxacin as a first line. It suggests that 16% of the levofloxacin prescriptions could have been avoided.

To reduce exposure to fluoroquinolones we should: avoid systematic association to ceftriaxone, prescribe levofloxacin as the second line after amoxicillin clavulanate when possible, and reduce dosage and duration of treatment.

[1] http://www.hcsp.fr/docspdf/avisrapports/hcsp20100202_enterobactBLSE.pdf.

[2] Definition from the World Health Organization.

[3] RAISIN: Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales.