INTRODUCTION
Infections due to multidrug- (MDR) or extensively drug-resistant (XDR) bacteria are increasingly recognized as an emerging problem worldwide. Asymptomatically colonized patients may contribute to the reservoir in the hospital setting, causing both horizontal transmission and endogenous infections. The latter manifested as spontaneous bacterial peritonitis (SBP) and spontaneous bacteraemia (SB) are prevalent in decompensated cirrhosis (DC).

AIM
To evaluate the effect of gastrointestinal (GI) colonization by drug-resistant (DR) bacteria on future infection development and prognosis of patients with DC.

METHODS
The phenotypic detection of KPC- and/or MBL-possessing Enterobacteriaceae isolates was carried out directly from rectal swabs (after their suspension in 1 ml saline) by a combined disk test with meropenem as a substrate without and with phenyl boronic acid (PBA), EDTA, or both. The likelihood of extended-spectrum β-lactamase (ESBL) coproduction was also performed using a modified CLED ESBL combined disk test with the addition of both EDTA and boronic acid to all disks. Several enterobacterial colonies with different morphotypes grown around the MEIR and CAOT or COT disks were picked up, subcultured, identified to the species level, and was further confirmed by PCRs for genes encoding β-lactamases using a panel of primers for detection of all types of MBLs, KPCs, OXA-48, plasmid-mediated AmpC in single PCRs for each gene, and ESBLs, including SHV, TEM, CTX-M, and GES enzymes. Screening for VRE was performed using chromogenic medium (bioMerieux). 107 asymptomatic patients without documented infection at baseline (after thorough investigation) were selected and prospectively followed-up for a median of 4.2 (0.07-23.2) months.

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RESULTS
In 47 (43.9%) patients, DR bacteria were isolated (14 were colonized with MDR and 33 with XDR or a mixture of MDR/XDR (Fig. 1). In 28 and 19 patients, a single and a diverse population of ≥2 bacteria respectively, was detected (Fig. 1). Severity of liver disease and demographic characteristics were similar with DR colonization (data not shown, Table 1).

The 20 (42.6%) with DR vs 14 (23.3%) without, had hepatic encephalopathy and/or SBP episodes, over the past 6 months (P=0.004). Fifteen (31.6%) patients with DR developed infection during follow-up but in only 7 the infection was microbiologically documented (in 1 case, culture of the ascitic fluid revealed an identical microorganism to that previously detected in rectal swab). Eighteen (36%) patients without DR developed infection but only 5 were culture-positive (no evidence of DR microorganism).

In a 3-month follow-up, mortality was higher in patients colonized with XDR compared to those without (log rank P=0.027) (Fig. 2). In multivariate analysis, colonization with XDR bacteria [HR=1.07 (0.12-1.12), P=0.039] and MELD score [HR=2.58 (1.11-5.99), P=0.028] were independently associated with low survival (Table 3).

CONCLUSIONS
• Frequent hospitalizations for complications of the underlying disease and selective pressure induced by the use of antimicrobials are probably the main determinants of gastrointestinal colonization with drug-resistant bacteria.
• Asymptomatic gastrointestinal colonization with extensively drug-resistant bacteria is a risk factor for increased mortality in decompensated cirrhosis.

REFERENCES