than 90% of significant microorganisms were detected within the first 5 days of incubation, whereas more than 50% of positives detected on days 6 and 7 were contaminants. Therefore, if the incubation period is reduced to 5 days, a 20% reduction of contaminants will be achieved and, furthermore, the workload will be reduced, since this implies a 28% daily reduction in the number of bottles to evaluate. From a clinical point of view, the fact that more than 90% of bacteremias were detected during the first 3 days of incubation is reassuring. In conclusion, we may state that, in our experience, the use of the BACTEC NR system allows a reduction in the incubation period from 7 to 5 days without any loss of sensitivity in bacteremia detection; nevertheless, a definitive and prospective study will be necessary to confirm our conclusions.

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Asymptomatic carriage of *Neisseria meningitidis* in a randomly sampled population. Serogroup, serotype and subtype distribution and associated risk factors

To assess the extent of meningococcal carriage and associated factors in the population of Cerdanyola, Spain (45,000 inhabitants), a cross-sectional study was carried out in a representative sample of 1500 healthy individuals randomly selected from the population register. The study was performed four times: in March, June, September and December 1992. A subject was sampled only once [1]. A throat sample was collected and immediately plated on Thayer-Martin medium (TM) and modified TM [2]. A questionnaire was completed at the time of sampling. The questionnaire data were analyzed by chi-square test, Student's t-test or Mann-Whitney test for univariate analyses and logistic regression for multivariate statistical analyses.

Of the 1500 subjects randomly selected, 191 (12.7%) were asymptomatic carriers of *Neisseria meningitidis*. Three serogroups were represented; B (137 isolates), C (12 isolates) and Y (3 isolates). Thirty-nine (20.4%) isolates were nonserogroupable. By logistic regression analysis, the risk of being an asymptomatic carrier of *N. meningitidis* was significantly greater for the group aged 14 to 18 years (OR*=4.55, CI 95%= 2.27, 9.14; compared with the reference category under 3 years old). Risk also increased during spring (OR=2.29, CI 95%=1.42, 3.67; compared with summer), in males (OR=1.67, CI 95%=1.21, 2.30) and in active smokers (OR=1.45, CI 95%=1.04, 2.01; for intervals of 10 cigarettes/day). The risk was significantly lower for individuals who had been treated with antibiotics during the previous 3 months (OR=0.58, CI 95%=0.37, 0.89) and for those living in larger dwellings (OR=0.84, CI 95%=0.71, 0.99; for intervals of 10 m²/person) [1].

The strains isolated from healthy carriers showed a great diversity of serotypes and subtypes. Only 49

*OR=odds ratio.

Table 1 Serogroups, serotypes and subtypes of *Neisseria meningitidis* strains present in carriers and patients with invasive disease in Cerdanyola

Serogroup	Serotype	Subtype	Carriers (n=191)	Patients with invasive disease (n=30)	Serogroup	Serotype	Subtype	Carriers (n=191)	Patients with invasive disease (n=30)
B	1	NST	12		B	NT	P1.16	2	
B	1	P1.10	1		B	NT	P1.2	3	
B	1	P1.13	1		B	NT	P1.6	3	
B	1	P1.14	2		B	NT	P1.7	1	
B	1	P1.15	1		B	NT	P1.9	2	
B	1	P1.2	1		C	15	P1.6	1	
B	1	P1.6	7[a]	1	C	2b	NST	7[a]	4
B	14	NST	3		C	2b	P1.1,2	1[a]	1
B	14	P1.1,7	1[a]	1	C	NT	P1.1,2	1	
B	14	P1.2	1		C	NT	P1.6	2	
B	14	P1.4	1		Y	14	NST	1	
B	15	P1.12	1		Y	4	P1.15	1	
B	15	P1.14	1		Y	NT	P1.6	1	
B	15	P1.15	2		NG	1	NST	1	
B	15	P1.16	1		NG	1	P1.10	1	
B	15	P1.6	6		NG	15	P1.6	2	
B	15	P1.17,16	3[a]	4	NG	2a	NST	2	
B	2b	P1.10	1[a]	1	NG	2a	P1.1,7	1	
B	4	NST	13		NG	2b	NST	3	
B	4	P1.1,2	5		NG	4	NST	2	
B	4	P1.1,7	1[a]	1	NG	4	P1.16	1	
B	4	P1.10	1		NG	4	P1.2	1	
B	4	P1.12	2		NG	4	P1.6	2	
B	4	P1.14	6[a]	2	NG	4	P1.7,9	1	
B	4	P1.15	10[a]	14	NG	4	P1.9	1	
B	4	P1.2	2		NG	4	P1.14,16	1	
B	4	P1.4	5		NG	NT	NST	8	
B	4	P1.6	16		NG	NT	P1.14	1	
B	4	P1.9	4		NG	NT	P1.15	3	
B	NT	NST	12[a]	1	NG	NT	P1.6	7	
B	NT	P1.10	1		NG	4	P1.14	1	
B	NT	P1.14	2		Total			49	30

B, serogroup B; C, serogroup C; Y, serogroup Y; NG, nonserogroupable; NT, nontypeable; NST, nonsubtypeable.
[a]Carrier strains with a serovar shared with systemic-disease-associated strains (Cerdanyola).

isolates (25.6%) shared their serovars with the 30 meningococcus strains causing invasive disease in the same population between 1987 and 1993 (Table 1). Interestingly, when only those serovars associated with invasive disease were considered, the highest carrier prevalence was in winter, the season in which most cases of invasive disease occur [3] (OR=2.99, CI 95%=1.19, 7.54; compared with spring as the reference category).

The data from this study, based on a large carrier survey with a randomly unbiased selection of individuals, confirm the results of others [4–6] in respect of risk factors for meningococcal carriage (age between 14 and 18, male sex, active smoking and small dwelling). On the other hand, asymptomatically carried serovars were generally different from the serovars causing systemic disease in the same population. The invasive serovars detected were more prevalent in asymptomatic carriage in winter.

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Endogenous endophthalmitis due to *Streptococcus agalactiae:* case report and review

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Bacterial endophthalmitis is a potentially devastating condition, often ending in visual loss, that usually occurs as a complication of intraocular surgery or penetrating nonsurgical trauma [1]. Endogenous or blood-borne infections of the eye are much less common than exogenous endophthalmitis, and may be seen in patients with known systemic infections or as the presenting sign of previously unrecognized sepsis [2]. The most frequent causative organisms of endogenous bacterial endophthalmitis are *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Escherichia coli*, *Streptococcus* spp., *Bacillus* spp., and *Pseudomonas aeruginosa* [2–4]. Meningitis, endocarditis and urinary tract infections are the septic foci most commonly implicated. We describe a case of endogenous endophthalmitis due to *Streptococcus agalactiae* in an adult male and review the English language literature on this entity (MEDLINE, National Library of Medicine, Bethesda, MD covering the years 1983–94).

A 44-year-old alcoholic man presented to another hospital with a 2-day febrile illness, shaking chills and diarrhea. Treatment with intravenous ciprofloxacin was initiated. On the third day of hospitalization, pain, redness and loss of visual acuity in the right eye occurred. He was referred to our institution because of suspected bacterial endophthalmitis. On admission he was febrile and tachycardic. There were redness and proptosis of the right eye with vitreous inflammation;

no hypopyon was noted. Visual acuity was restricted to perception of light. Physical examination was otherwise normal. An intravitreal injection of vancomycin and gentamicin and topical cycloplegics and steroids were given. No intraocular specimens for culture were obtained. Empirical treatment was started with intravenous cefotaxime, 3 g every 4 h. *S. agalactiae* grew from four blood cultures. After the culture results were available, cefotaxime was discontinued and penicillin 1800 mg every 4 h combined with gentamicin 100 mg every 8 h was begun. The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) for penicillin were 0.12 mg/L and >4 mg/L, respectively. Peak and through serum bactericidal activities were 1/256 and 1/32, respectively. On the second day after admission there was no light perception in the right eye. During the next several days, severe pain in the right sternoclavicular joint developed and a mitral diastolic murmur became evident. An echocardiogram revealed severe mitral stenosis (1 cm^2) with mild mitral and aortic regurgitation and a vegetation of 13 × 13 mm at the mitral valve. Scan with both ^{99}Tc and ^{67}Ga showed a high uptake at the affected joint. The ocular inflammation gradually settled and the patient's general condition improved. He was discharged after 6 weeks of intravenous penicillin treatment. Three days later the patient suffered acute ischemia of the left arm and right limb due to humeral and popliteal emboli. He underwent embolectomy and valvular replacement. Cultures of the blood, the embolus and the mitral valve were negative. He remains in good clinical condition after 1 year of outpatient follow-up.

An increase of invasive disease due to group B streptococci in adult men and non-pregnant women has been reported in recent years [5,6]. Endogenous endophthalmitis is a very uncommon manifestation of group B streptococcal bacteremia in adults. In fact, we found only 11 previously reported cases in our review of the literature. These 11 cases with the addition of our case are summarized in Table 1 [3,4,7–10]. All patients presented other foci of infection at the time of endophthalmitis diagnosis, especially arthritis and endocarditis. In three cases eye symptoms were the first signs of sepsis, while in five cases endophthalmitis developed after other manifestations of septicemic illness, usually arthritis.

The treatment of the 12 patients reported was heterogeneous. In fact, management of endogenous endophthalmitis remains controversial. Treatment of endogenous endophthalmitis requires prompt recognition and high-dose intravenous antibiotics. Some authors suggest that ocular fluids do not need to be obtained for diagnostic purposes if the patient is known