

Session: P100 Bacterial meningitis: diagnosis and epidemiology

Category: 2b. Severe sepsis, bacteraemia & endocarditis

25 April 2017, 12:30 - 13:30

P2110

Invasive meningococcal disease in two Italian regions: a prediction of the risk of death

Carlo Tascini¹, Francesca Salani², Emanuela Sozio³, Francesco Sbrana⁴, Andrea Ripoli⁴, Ferdinando Cellai⁵, Spartaco Sani⁶, Paolo Roncucci⁷, Alessandro Bartoloni⁸, Jessica Mencarini⁹, Italo Calamai¹⁰, Donatella Aquilini¹¹, Carolina Rescigno¹², Pasquale Pagliano¹³, Antonio Izzi¹⁴, Novella Carannante^{*15}, Raffaele DI Sarno¹², Fiorentino Fraganza¹⁶, Luca Monastra¹⁶, Francesco Menichetti¹⁷

¹*U.O. Malattie Infettive, Azienda Ospedaliera Universitaria Pisana; Cotugno Hospital; First Division of Infectious Disease*

²*Nuovo Santa Chiara University Hospital; Infectious Disease Clinic*

³*Azienda Ospedaliera Universitaria Pisana; U.O. Medicina D'urgenza Universitaria*

⁴*Fondazione Toscana Gabriele Monasterio*

⁵*Asl 2 Lucca; Uo Anestesia e Rianimazione*

⁶*Usl 6 Livorno; Uo Malattie Infettive*

⁷*Usl 6 Livorno; Uoc Utic*

⁸*University of Florence, Department of Experimental and Clinical Medicine; Malattie Infettive*

⁹*University of Florence; Infectious and Tropical Disease; Dipartimento DI Medicina Sperimentale e Clinica*

¹⁰*Usl 11 Empoli; Uo Anestesia e Rianimazione*

¹¹*Usl 4 Prato; Uo Malattie Infettive*

¹²*Azienda Ospedaliera Dei Colli; Cotugno Hospital; First Division of Infectious Disease*

¹³*Aorn Dei Colli; D. Cotugno Hospital; Infectious Diseases*

¹⁴*Ospedale Civile Cotugno; Malattie Infettive*

¹⁵*Azienda Ospedaliera Dei Colli; Cotugno Hospital; First Division of Infectious Disease*

¹⁶*Azienda Ospedaliera Dei Colli; Monaldi Hospital; Intensive Care Department*

¹⁷*Infectious Diseases Unit; Cisanello Hospital*

Background: The Invasive Meningococcal Disease (IMD) incidence in Europe is decreasing, showing an average incidence of 0.68/100.000 population mainly due to Serogroup B followed by Serogroup C. However, during 2015-2016 biennium, Tuscan Region has been affected by an IMD epidemic outbreak caused by serogroup C *Neisseria meningitidis* hypervirulent Sequence Type 11 clonal complex (ST-11 cc).

Material/methods: 67 patients (males 63% - median age 31±21 years) with an IMD developed in Tuscany Region and in Cotugno Hospital of Naples, from January 2015 to August 2016, were enrolled in this study. We analyzed the underlying patient's characteristics, risk factors and clinical characteristics. To predict the risk of death we fit a multivariate logistic regression with a gradient boosting approach. As a result, the odds ratios (OR) of the selected variables were computed.

Results: Demographics, main clinical characteristics, antibiotic therapy during IMD and outcome of study population are summarized in Table 1. In Tuscany cluster older patients, more serogroup C and purpura fulminans were more frequent. Furthermore IgM enriched Immunoglobulin treatment markedly reduced (about 57%, OR 0.429) the probability of death, while septic shock (OR 2.261) appeared as the strongest risk factor for death, and a role has been found for SOFA score (OR 1.269), Serogroup C (OR 1.241), age (OR 1.010) and purpura fulminans (OR 1.062).

Conclusions: Since IgM enriched Immunoglobulin use is the only protective factor with respect to patients' outcome it could be suggested as a complementary therapy to antibiotics and corticosteroids. A randomized controlled trial is necessary to confirm these data.

Table 1: Clinical characteristics, therapy and outcomes of study population and comparison between overall survival and overall death.

	Patients (n = 67)	Overall Survival (n = 59)	Overall Death (n = 8)	p
Tuscany region	32/67 (48%)	25/59 (42%)	7/8 (88%)	0.043
SOFA	4 [2-7]	4 [2-6]	10 [10-11.5]	<0.001
Serogroup C	31/67 (46%)	24/59 (41%)	7/8 (88%)	0.034
Δ Time from onset of symptoms to begin empirical antibiotic therapy (days)	1 [1-2]	1 [1-2]	1 [0.75-1]	0.047
Presence of Purpura	13/67 (19%)	8/59 (14%)	5/8 (63%)	0.004
Septic Shock	42/67 (63%)	34/59 (58%)	8/8 (100%)	0.053
Empirical antibiotic therapy with Ceftriaxone	58/67 (87%)	51/59 (86%)	7/8 (88%)	1.000

Steroid therapy	56/67 (84%)	49/59 (83%)	7/8 (88%)	1.000
IgM enriched immunoglobulin therapy	24/67 (36%)	23/59 (39%)	1/8 (13%)	0.283