论文

硫酸镁治疗妊娠高血压综合征的群体药动学—药效学

芮建中;杨友春;王亦流1;陈刚

南京军区总医院，南京210002；1海军总医院，北京 100037

摘要：

用 NONMEM 程序分析硫酸镁治疗妊娠高血压综合征患者的群体药动学-药效学,以快—慢速率相继静脉输注二室开放模型拟合60例患者的群体药动学参数,以效应室与中央室连接的三室模型,用参数法拟合26例患者的Sigmoid E_{max} 药效学模型的群体参数。采用分光光度法测定血镁浓度(以给药前的基础值作调整),选择舒张压降低的百分率为药效指标。硫酸镁的群体药动学参数为:群体典型值K_{10}(h^{-1}),K_{12}(h^{-1}),K_{21}(h^{-1})和Vc(L)分别等于1.62,20.8,2.70,27.0,其个体间变异σ_{K10}(%),σ_{K12}(%),σ_{K21}(%),σ_{Vc}(%)分别等于25.70,14.13,24.33,34.04,浓度的残差变异σ_E(%)等于15.03。硫酸镁的群体药效学参数为:群体典型值E_{max}(%),$C_{e(50)}$($\mu g \cdot ml^{-1}$),u,K_{eo}(h^{-1})分别等于28.73,28.39,4.22,0.43。其个体间变异σ_{Emax}(%),σ_{Ce}(50)(%),σ_u(%),σ_{Keo}(%)分别等于56.32,62.24,33.47,42.76。效应的残差变异σ'_E(%)等于28.54。

关键词： 妊娠高血压 硫酸镁 群体药动学 群体药效学 数学模型

POPULATION PHARMACOKINETICS/PHARMACODYNAMICS OFMAGNESIUM SULFATE IN PREGNANCY INDUCED HYPEKTENSIVE GKAVIDAS TREATED WITH THE DRUG

JZ Rui;YC Yang;YN Wang and G Chen

Abstract:

NONMEM program was applied for analyzing population pharmacoki netics/pharmacodynamics of magnesium sulfate in pregnancy induced hypertensive patients treated with thedrug.A 2-compartment Open medel with fast and slow consecutive intravenous infusion was used toestimate population pharmacokinetics from 60 patients,A 3-compartment model comprised an effectcompartment linked to the central compartment,sigmoid Emax effect model and parametric methedwere used to estimate population pharmacodynamic parameters from 26 patients. Serum magnesiumconcen trati on was determined by spectr ophotometric method ant it was adjusted with basic valuedetermined before dosage. The diastolic blood pressure lowering effect was chosen as index of effect ofcardiovascular response.The population pharmacokinetic parameters of magnesium sulfate were:the standard value of K_{10}(h^{-1}),K_{12}(h^{-1}),K_{21}(h^{-1}),and Vc($L \cdot kg^{-1}$)were estimated to be I.62,20.8,2.70,and27.0 , respectively.Their interindividual varibilities were estimated to be 25.70%,14.13%,24.33%,and 34.04%,respectively.The residual error of concentrations was 15.03%,Thepopulation pharmacedynamic parameters of magnesium sulfate were:the standard value of E_{max}(%),$C_{e(50)}$($\mu \cdot ml^{-1}$),v,and K_{eo}(h^{-1}) were estimated to be 28.73,28.39,4.22,and 0.43.Theirinterindividual variability were estimated to be 56.32%,62.24%,33.47%and 42.76%. Theresidual error of effect was 28.54%.

Keywords: Magnesium sulfate   Population pharmacokinetics   Population pharmacedynamics   Mathematieal model   Hypertension pregnancy induced

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