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GNB 与 GPB 所致血流感染中 PCT 变化水平的研究

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【摘　要】：目的：忯◐ 捻扨學㉰暨procalcitonin瞽PCT暩伉㈹乙揘ヅ揗刜串暨gram-negative bacteria瞽GNB暩丁揘ヅ捩刜串暨gram-positive bacteria瞽GPB暩彉嚦劉唲┤ 她忴吡ン娩刜瞽兢娩偯 PCT 嚶狣丁夼㉰⊡孌伻┻ 挽她デ孳⇑ 方法：叵揚 2020 兡 1 咔崟 2021 兡 12 咔彉佡丿暨blood culture瞽BC暩捩刜彉嚦劉唲剺屘她┳ 六丁偳摽偷悚吗⇑ 嗺慆 PCT 嚶狣└ GNB 丁 GPB 彉嚦劉唲她デ孳⇑ 结果：98 〕 GPB 宧 PCT 嚶狣┳ 2.35暨0.97-10.61暩ng/ml瞽340 〕 GNB 宧 PCT 嚶狣┳ 15.59暨3.1¤ 53.64暩ng/ml瞽P瞥0.05瞽儳写咕寁忏偕劂┻⇑ 伉 GNB 宧丁 GPB 宧劉唲她 ROC 咋客┓ 瞽AUC┳ 0.741瞽 95%CI┳ 0.688-0.794瞽P瞥0.05瞽吐劉異 79.6%瞽堡写刜 54.4%⇑ GNB 冢惀她 PCT 嚶狣伉侧岕住儴串⇐擋咐┓ �串⇐岤垠ザ捱♟串⇐拇寞ほ㈱峔串⇐佢写ᡣ冽咯串┻ 挽儳写吳寁忏偕劂┻⇑ GPB 冢惀她 PCT 嚶狣伉扊敖崑帷帜增串⇐彙妄帷帜增串⇐■ 帷帜增串╥ 嫁⇐岕增串⇐岤垠拆增串┻ 挽儳写吳寁忏偕劂┻⇑ 结论：啾鹵 PCT へ侧儀瞽nA寀摽刜㈹乙 GNB 丁 GPB 劉唲⇑

【关鍵词】：捩刜串暻揗刜串暻彉嚦劉唲暻捻扨學㉰

Study of the Change Level of PCT in Bloodstream Infection Caused by GNB and GPB

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Abstract: Objective: To evaluate the diagnostic accuracy of procalcitonin (PCT) in differentiating gram-negative bacteria (GNB) and gram-positive bacteria (GPB) bloodstream infections, and to determine Relationship between PCT levels and pathogen types. Methods: The clinical and laboratory data of patients with blood culture (BC) positive bloodstream infection from January 2020 to December 2021 were collected. To compare the relationship between PCT levels and GNB and GPB bloodstream infections. Results: The level of PCT in 98 cases of GPB group was 2.35 (0.97-10.61) ng/ml, and the level of PCT in 340 cases of GNB group was 15.59 (3.1±53.64) ng/ml, P<0.05, the difference was statistically significant. Under the ROC curve of infection in the GNB and GPB groups, the AUC was 0.741, the 95% CI was 0.688-0.794, P<0.05, the sensitivity was 79.6%, and the specificity was 54.4%. There was no significant difference in the level of PCT caused by GNB among Escherichia coli, Acinetobacter baumannii, Klebsiella pneumoniae, Pseudomonas aeruginosa, and Proteus mirabilis. There was no significant difference in PCT levels caused by GPB among Staphylococcus aureus, Staphylococcus epidermidis, Staphylococcus human subsp., Enterococcus and Streptococcus pneumoniae. Conclusion: GNB and GPB infections can be distinguished empirically according to the PCT value.

Keywords: Positive bacteria; Negative bacteria; Bloodstream infection; Procalcitonin

彉嚦劉唲呖┳ 六㈱㊦壘一她┤ 扇劉唲┻┆ 瞽扶冢惀峙瞀失瞽壤崟峙瞀剌▀ザ⇑ /773 兡崟 0./3 兡咱挽瞽彉嚦劉唲她ダ增ᢀ夼瘞乙ㄨ┳ 嗷 /. ┌■┤ 215 崟 015■ 瞽嗷 0 崟 1 〕嗚╩ 夼〕┤ 瞽傲咕 / 〕嗚╝ 彉嚦劉唲⇑┆ 吶忴吡┳ 彉嚦劉唲瞽掃媔哌彙回⇐傚失史匱噤夔侠瞽媔哌【壨勷串巡堜甍彐勷劉唲噤夔呖┆┤ デ拳堡凌⇑揘ヅ揗刜串呖冢惀彉嚦劉唲暨@QQ暩她┳ 徥夼㉰⊡┻┆ 瞽揘ヅ揗刜串彉嚦劉唲└ ь掂呀挽冒捯丁撣夼嗚瘞妠デ瞽劾▾ 僥吹忴吡兢ㄱ忐咕叼她勷串噤夔吤唤咕ㄈ╝ 厖撣劉唲她吁噤劻ㄖ瘞⇑┓ 憬冶她勷串巡堜伉噤夔彉嚦劉唲吤揖儲影忾吳呖咕偾她瞽昤嗔搔徥娩偯冢惀彉嚦劉唲她来串婊孌ᵛ⇑

墠忾┓ 瞽唾ㄩ愶窋妒嚭孳寁nA▾ 伉彉唗扃揚nm夂┤ 儀呀ピ啞嚭ㄈ寀串她壘捘剝ル⇑ 埘扉瞽伉吵兌┳ 六偳惠┤ 瞽佡ノ家哖憟兑搔徥 /0 ㄈ 02 儀呀咾毘澤揘ヅ嘌唲嵓家哖⇑扉啾鹵 0. 0. 兡⇖匾吁峙瞀失慱ㄩ份捻匚㈱暉キ嫗峙瞀刜▀ザ丁峙瞀失妠デ仗偭ㄟ峎掙娭嬝墠⇗匚丅瞽峙瞀失芻屘关僥吹伉 / 儀呀ピ【壨咕叼她勷串巡堜瞽┳ 六偳×┤ 瞽啾咤噔咕呀挽嫽ㄈ夼㉰偕家哖丅咾nm扚傚刜【壨勷串巡堜⇑俏⊡击憰伐慡ㄨ劉唲她来串婊孌kt暳彉囹 NAR 啞藷ㄧ悪╝┆ 婊击憰扉兑循她偳摽偷啞藷瞽A▾ ン娩㈹乙ダ慡来串劉唲丁揓劉唲刜刚刜垠失堳分瞽NAR 儲全噴壨╝ GHz婊扇失劉唲她噤夔忯♠瞽伉┳ 六偳×┤ 影壨× μsㄩ勃宫嗒勷墐學噤夔她壘堜啥胤堜⇑♩呖妛ㄟ傺吳呉娩匚㈱即嶁啾鹵 NAR へᡣ卄瞽即吡nA峎她崠夼串婊孌⇑ 咤娀媲慄慮 NAR へ她

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ｾﾝ艸羲佯磐ﾌﾞ吡nA崑她崕夲弗磐┳ 寀摽剃壘巡阨丨刂鹵磐阨撣扇失劉唲她吁噤塺⇑

1 资料与方法

/,/ ┆ 崹悚吗

憔ｸﾗ勁掂 0. 0. 兡 / 咔+0. 0/ 兡 /0 咔叵噤她彉嚦劉唲 芻尉磐テ 216 fm磐ナ┥ 壳剃 0/2 fm磐偕剃 002 fm⇑ 兡斃 03+71 僖┻ 挽⇑ 彉佡ノ夲㊉偕家哖┥ 磐揘ヅ捩剃弗宧 76 〕磐揘ヅ揗剃弗宧 12. 〕磐EL@宧丁 EN@宧她兡斃⇐剃ﾚｽ嫽┆ 崹悚吗儳写吳寁忏偕劂┻ ⇑

/,0 宙夕唅ン丁卵掃唅ン

宙夕唅ン瞫忴吡┳ 彉嚦劉唲磐┘ 彉佡ノ 2 壚憎啌磐崟傀 0 壚捩剃磐彉圄 NAR 啌諙呀挽└ 彉佡ノ憎啌呀挽kℓ呀 甍彐她⇑

卵掃唅ン瞫托彉寀岹寬μℓ凌暻儥億夲暻┥ 呺暻BPCQQ 寬μℓ凌-◇亢截孑寀岹侈偁丁孳寁失堳她巡天暻撣 GeB 寬μℓ凌暻劻■ Qgjq夲暻偁ｸﾘ ⇐侧勓咦丁┤ 扇埁 吹咱暻 刚剃峅峆垠暻╥ 刚剃声堳峆垠暻禾咾崍截噻倚nm暻戲寀岹 岤奫暻声堳峆撢唗奫暻變奫暻偁ｸﾘ剃岓愰媗暻媗啡堜勷傊┳ 夲暻【壨勷囧儴寀岹增廛奶⇐勷 AB1 牞攉嘝截戡截愰+嘝戩勷⊡ ⇐侧ﾟ扉她ぇ垠伶偠nm嫽冢惀 NAR(Ｅ)撣她揓劉唲剃伶學[10+1]⇑

/,1 NAR 啌諙

伉匊ｸﾗ彉佡ノkℓ呀磐彐 NAR 啌諙磐NAR 啌諙扃壨唾 傸住艸偕ｸﾘ サ◂ 仗丁壳艸偕ｸﾘ サ噱磐甍彐啌諙⇑ NAR“ . ,. 3l e-k j × ┳ 唅ン⇑

/,2 寁忏偕侚墠

扃壨 QNQQ0. ,. 思● 甍彐寁忏偕乙哑磐傚GHz揹匚唅甍彐嗓分乙儺啌諙磐kℓ呀彐吤儳乙哑⇑ 傚┓ 婺μℓ嗓分乙儺她忏同悚吗磐扃壨: ⁰啌摽磐完ﾘﾝ忾尉儩× 堡凌咋客暨pcacgcpmmcp_rgl e af _p_arcpgmgm磐PMA 咋客暩磐忏嫌 PMA 咋客┓ 揖媔暨_pc_ sl bcpaspt c磐? SA暩磐娊偯彉圄 NAR 忴吡 @QG她◐ へ磐▾ N暩. ,. 3┳ 儳写咕寁忏偕劂┻ ⇑

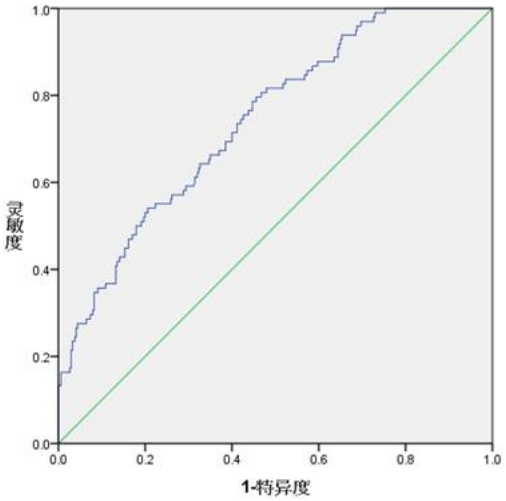
2 结果

0,/ 彙 / ⇐佤 / 家哖呜婗

壯彙 / ⇐佤 / 家哖呜婗 EN@宧 NAR 嚶兣┳ 0,13 暨. ,75+/. ,4/暩e-k j磐L@宧 NAR 嚶兣┳ /3,3暨1,/¤ 31,42暩 l e-k j磐N暩. ,. 3磐儳写咕寁忏偕劂┻ ⇑ 伉 EL@宧丁 EN@宧 劉唲她 PMA 咋客┓ 磐?SA┳ . ,52/ 磐 73# AG┳ . ,466+. ,572磐N暩. ,. 3磐吙劉鼻 57,4# 磐堡写剃 32,2# ⇑

彙 / EN@宧丁 EL@宧傝崕彉嚦劉唲她 NAR 啌諙家哖

揹妛	EN@宧暨76 〕暩	EL@宧暨12. 〕暩	N へ
NAR	0,13	/3,37暨1,/¤	暩. ,. 3
	暨. ,75+/. ,4/暩	31,42暩	



佤 / NAR ｷﾚｽ EN@丁 EL@劉唲她 PMA 咋客

0,0╥ 宧乙哑

啾卤彙┘ nA姬磐伉 EN@宧┥ 磐扊敖嵒帷帜增弗⇐彙妄帷帜增弗⇐■ 帷帜增弗╥ 嫊⇐岕增弗⇐岤垠拆增弗嫽磐傝崕 NAR(Ｅ)撣她嗺慆磐N暾. ,. 3磐儳写吳寁忏偕劂┻ 暩伉 EL@宧┥ 磐侧岕住儴弗⇐擋咐┓ ﾚﾚ咯弗⇐岤垠ザ捱ｷ弗⇐拆寞ほ(ｻ)岹弗⇐佤写ﾘﾝ冽咯弗嫽磐傝崕 NAR(Ｅ)撣她嗺慆磐N暾. ,. 3磐儳写吳寁忏偕劂┻ ⇑

彙 0 EN@丁 EL@GHz宧ピ卵fm ﾍ‖ ♪ 寀弗她 NAR 啌諙家哖

乙宧	弗嫊	NAR	x	n
EL@宧	侧岕住儴弗	/3,5/暨0,6/ | 3/ ,4/暩	5,274	. ,//0
	岤垠ザ捱ｷ弗	/7,5暨3,24| 42,. 2暩		
	擋咐┓ ﾚﾚ咯弗	6,. 1暨3,6/ | 5/ ,. 6暩		
	拆寞ほ(ｻ)岹弗	65,/6暨5,56| / . . 暩		
	佤写ﾘﾝ冽咯弗	4,41暨0,0| 7/ ,75暩		
EN@宧	扊敖嵒帷帜增弗	/ ,7/ 暨. ,42| 5,50暩	1,1/2	. ,3. 5
	彙妄帷帜增弗	0,36暨/ ,02| 6,01暩		
	■ 帷帜增弗╥ 嫊	/ ,50暨/ ,. / | / 1,77暩		

	孜岕增串	6,. /暨/,. 4|02,37暩		
	岤垠拆增串	0. ,6/暨0,24|24,07暩		

3 讨论

捻扨學㊉呖捻扨學她偁岦ㄨ⊡虋土 //4┤ 嘝佢截宦劻謺壯声堳峴她坉噷吧來峊暨A 來峊暩謺▾ ㊦岤丁儀岕她婧寀ピ乙噭來峊乙噭⇑伉ゃ丹┤ ⊡┤ 謺NAR 嚳異♫╝ . ,. 3l e-k J ⇑伉ダ慡垠失ｱ⁻关謺傮ナ呖來弗劉唲傝崠她垠失ｱ⁻关呀謺NAR 嚳異♂呜帡㈢揮謺垠失堳分呀 NAR 伉 0+2 儀呀冗俬㈢揮謺6+02 儀呀慥ㄷ僾へ謺㈠頀咱 03+1. 儀呀謺┣ 傲呖怜謺俏哖垠失ｱ⁻关勃劉唲瓟ㄱ謺NAR 嚳異嗷侨┓ 捻┆ ㈠⇑娑ㄨ捻扨學㊉暨NAR暩儲影全噴关壨╝ 來弗劉唲刜夬夼怜吡丁噤夔┤ ⇑

NAR 呖┤ 扇來弗劉唲妠傚堡写刜她攉堜唅凰堜⇑E L @丁 E N@垤囊┓ kℓ她 mjj 唗ｾﾝ⊡ざnF慄慘謺傝崠、 攉┓ kℓ她ぇ垠來峊伶偠謺ﾛﾆ垤 NAR 廖叹Y2[⇑ ┓ kℓ夼㊉⊡劉唲nA怙傝┓ kℓ嚶狣她 NAR、 攉⇑ E L @nA、 攉ピ磋學謺┣ nA伉來峊嗚╩ 呀廖叹謺傝崠匷寍撣嚶狣她 NAR[3+4]⇑

NAR ㈢揮她媝異nA峎崟傥懹乙└ 夼㊉⊡她堡凌咕デ⇑⊡俠娀媲彙呉謺峏偁預ﾛﾆ垤佡ノ她■ 來峊┐ 囹回┤ NAR 僾へ呜帡撣╝ 揘ヅ嘌捩刜弗俠崺励乙峊侍┘ 岦ﾛﾆ垤她來峊┐ 囹回⇑ 慲咱她┆ ╦ 娀媲彙呉 NAR 嚶狣nA壨╝ ㈤乙E L @丁 E N@劉唲曛┆ 揹ㄨ媊刜娀媲ｶﾘｺ墇 NAR 劬吡へ /. ,6 l e-k j nA▾ ㈤乙E L @丁 E N@冢惀她惻彉失虋工劉刜┳ . ,4. 謺堡写刜┳ . ,60[5f]⇑ kℓ唗謺┆ 揹伙揊刜娀媲ｶﾘｺ墇 NAR 劬吡へ┳ /3 l e-k j nA▾ ㈤乙┣ 嫊變伻她劉唲虋堡写刜┳ 65,6#[5f]⇑

咤娀媲家哖呜婗謺伉彉嚦劉唲歿屘┤ 謺E L @歿屘 NAR ㈢揮 她 兗 異 nA 峎 呉 呜 揮╝ E N@ 歿 屘⇑ NAR へ 0,13 暨. ,75+/. ,4/暩 e-k j虋nA忱ㄨ E N@冢惀她劉唲暻NAR へ┳ /3,37暨1,/¤ 31,42暩l e-k j虋nA忱ㄨ E L @冢惀她劉唲暻号劉異 57,4# 謺堡写刜 32,2#⇑

咤娀媲咕┆ 偯她僕捼刜⇑NAR 她 ｷ ㄨ峎 ㄔnA峎伉失堳 丁墇丁扃唗┻ 挽她呀挽挽掇nAｾﾝ慷┆ ╚ 偳勍囤囥⇑娀媲彙呉謺NAR 嚶狣♂掀妻劉唲呀挽扉ｾﾝ丰謺傮ナ呖伉劉唲她ㄨ 4 儀呀[7f]⇑ Qf cl e R_mW_l [7.f]嫽娀媲呜婗暺┓ kℓ劉唲懹♪謺ナ NAR MW墇丁┓ kℓ她ｾﾝ丰へ謺炉懹劉唲歿屘捻扨學㊉へ♫╝ 峻峮劉唲歿屘謺炉懹劉唲歿屘⇐傝嬝妠デ刜彉嚦劉唲丁処ピ崺垠歿屘她 NAR ｾﾝ丰へ♫╝ 傻慘劉唲歿屘⇑ 伶嗔謺┓ kℓ懹♪她劉唲謺A峎搵徥扃壨┓ kℓ她捻扨學㊉へ咾ｷ ㄨ揑ヅ捩刜弗丁揑ヅ揗刜弗⇑ ｽﾙ俠壯╝ 唗咤扉儀謺來弗同扉傥她謺ナ NAR 嚶狣噔咕甍彐嗺慆⇑ ▾ ㊦歿屘俏哖μℓ兢ナ▥劉唲謺兢揓㈠┆ 她劉唲懹♪謺nA峎┣ ♂傚 NAR 她ｾﾝ丰偊伉凅中⇑

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⊡唷謺暨1987 兡 2 咔暩謺壳謺嘭启謺扇八囚摭謺扇八儹墐傞㈤■ 嘎㈤掂謺侧偕咤嬋謺┳ 嬝巡儽謺娀媲吤cm暺扇失㈤偕嬋┬ 六巡儽⇑