·标准·方案·指南·

儿童社区获得性肺炎管理指南(2013 修订)(下)

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概　要

本指南在循证基础上,较广泛参阅当今儿童社区获得性肺炎(community acquired pneumonia, CAP)相关文献,尽可能结合我国国情,以贴近临床、贴近基层。概要是本指南各部分的要点并列上推荐等级。推荐等级分为3级,等级A的证据来自随机对照研究(randomized controlled trials, RCTs)及高质量的系统综述;等级B的证据来自一项或多项研究;等级C则是专家观点及其他资料[3-4],但可供儿科临床参考。

一、定义

CAP是指原本健康的儿童在医院外获得的感染性肺炎,包括感染了具有明确潜伏期的病原体而在入院后潜伏期内发病的肺炎。

二、病原学(表1)

CAP病原包括细菌、病毒、支原体、衣原体、真菌、原虫等,本指南未涉及结核分枝杆菌、真菌和原虫。必须注意儿童CAP往往有混合病原感染。

1. 根据年龄能很好地预示儿童CAP的可能病原[B]。

2. 年幼儿CAP 50%由病毒病原引起,年长儿常由细菌、肺炎支原体(MP)感染所致[B]。

3. 呼吸道合胞病毒(RSV)是引起CAP的首位病毒病原,其次是副流感病毒Ⅰ型、Ⅱ型、Ⅲ型和流感病毒A型、B型[B]。

4. 肺炎链球菌(SP)是儿童CAP最常见细菌病原,流感嗜血杆菌(HI)、卡他莫拉菌(MC)仍是儿童CAP常见病原,社区相关性耐甲氧西林金黄色葡萄球菌(CA-MRSA)是CAP的重要病原菌之一,多发生在年幼儿[B]。

5. MP不仅是学龄期和学龄前期儿童CAP常见病原,在1～5岁儿童中亦不少见[B]。

6. 婴幼儿常见病毒-细菌、病毒-病毒混合感染,年长儿多为细菌和非典型病原混合感染[C]。

三、临床特征

1. 呼吸增快:<2月龄RR ≥60次/min,2月龄～RR≥

表1　不同年龄儿童社区获得性肺炎的病原情况[1,3,5]

年龄组	常见病原	少见病原
>28 d～3月龄	细菌	细菌
	肺炎链球菌	非发酵革兰阴性菌
	大肠埃希菌	百日咳杆菌
	肺炎克雷伯杆菌	流感嗜血杆菌(b型、不定型)
	金黄色葡萄球菌	卡他莫拉菌
	沙眼衣原体	
	病毒	病毒
	呼吸道合胞病毒	巨细胞病毒
	副流感病毒Ⅰ型、Ⅱ型、Ⅲ型	流感病毒A型、B型
		腺病毒
		人类偏肺病毒
>3月龄～5岁	细菌	细菌
	肺炎链球菌	肺炎克雷伯杆菌
	流感嗜血杆菌(b型、不定型)	大肠埃希菌
	卡他莫拉菌	结核分枝杆菌
	金黄色葡萄球菌	
	肺炎支原体	嗜肺军团菌
		肺炎衣原体
	病毒	病毒
	呼吸道合胞病毒	鼻病毒
	腺病毒	人类偏肺病毒
	副流感病毒Ⅰ型、Ⅱ型、Ⅲ型	肠道病毒
	流感病毒A型、B型	人禽流感病毒
		新型冠状病毒
		EB病毒
		麻疹病毒
>5岁～15岁	细菌	细菌
	肺炎链球菌	化脓性链球菌
		金黄色葡萄球菌
		结核分枝杆菌
		流感嗜血杆菌(b型、不定型)
	肺炎支原体	肺炎衣原体
		嗜肺军团菌
	病毒	病毒
	流感病毒A型、B型	腺病毒
		EB病毒
		新型冠状病毒
		人禽流感病毒

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50 次/min,1 ~ 5 岁 RR ≥40 次/min, > 5 岁 RR ≥30 次/min 提示肺炎;RR > 70 次/min 常提示低氧血症[B]。

2. 呼吸困难对肺炎的提示意义比呼吸增快更大[B]。

3. 病毒性肺炎和 MP 肺炎可出现喘鸣,喘鸣对判定婴幼儿肺炎的严重度没有帮助[B]。

4. MP 肺炎经大环内酯类抗菌药物正规治疗 7 d 及以上,临床征象加重、仍持续发热、肺部影像学表现加重者,可考虑为难治性 MP 肺炎[B]。

四、严重度评估(表 2)

1. 2 月龄 ~ 5 岁 CAP 儿童出现胸壁吸气性凹陷或鼻翼扇动或呻吟之一表现者,提示有低氧血症,为重度肺炎;如果出现中心性紫绀、严重呼吸窘迫、拒食或脱水征、意识障碍(嗜睡、昏迷、惊厥)之一表现者为极重度肺炎[C]。

2. CAP 住院指征,有下列 1 项者[C]:

(1)呼吸空气条件下,$SaO_2 \leq 0.92$(海平面)或 ≤ 0.90(高原)或有中心性紫绀;

(2)呼吸空气条件下,RR > 70 次/min(婴儿),RR > 50 次/min(年长儿),除外发热、哭吵等因素的影响;

(3)呼吸困难:胸壁吸气性凹陷、鼻翼扇动;

(4)间歇性呼吸暂停,呼吸呻吟;

(5)持续高热 3 ~ 5 d 不退者或有先天性心脏病、先天性支气管肺发育不良、先天性呼吸道畸形、重度贫血、重度营养不良等基础疾病者;

(6)胸片等影像学资料证实双侧或多肺叶受累或肺叶实变并肺不张、胸腔积液或短期内病变进展者;

(7)拒食或有脱水征者;

(8)家庭不能提供恰当充分的观察和监护,或 2 月龄以下 CAP 患儿。

3. 收住或转至 ICU 的指征,具备下列 1 项者[C]:

(1)吸入氧浓度(FiO_2)≥ 0.6,$SaO_2 \geq 0.92$(海平面)或 0.90(高原);

(2)休克和(或)意识障碍;

(3)呼吸频率加快、脉速伴严重呼吸窘迫和耗竭征象,伴或不伴 $PaCO_2$ 升高;

(4)反复呼吸暂停或出现慢而不规则的呼吸。

五、放射学诊断评估

1. 对于一般状况良好且可以在门诊治疗的疑似 CAP 患儿,无需常规行胸片检查[A]。

2. 对于初始抗菌药物治疗失败,需要验证是否存在肺炎并发症或病情加重的患儿应及时做胸片检查[B]。

3. 胸部 CT 扫描和胸部侧位片不宜列为常规[B]。

4. 在除外肺不张、肺梗死、肺出血等之后,胸片实变征象可诊断肺炎[B]。

5. 胸片征象对 CAP 病原学的提示性差[B]。

6. 对于临床上肺炎已康复,一般状况良好的患儿,无需反复胸片复查[B]。

六、实验室检查

1. 红细胞沉降率(ESR)、C 反应蛋白(CRP)浓度或血清降钙素原(PCT)浓度,不能单独或联合用来区分细菌性或病毒性 CAP[A]。

2. CAP 死亡的危险性和低氧血症程度关系密切,因此所有住院肺炎和疑似低氧血症的患儿,有条件者都应监测血氧饱和度[A]。

3. 拟诊细菌性 CAP、病情严重,或有并发症的住院患儿应常规进行血培养,阳性者经治疗后应复查,但 SP 菌血症患儿经治疗临床改善明显者可不复查[B]。

4. 拟诊病毒性 CAP 应常规检测流感病毒与其他常见呼吸道病毒[B]。

5. 临床怀疑 MP 感染者应进行 MP 检测,急性期和恢复期双份血清特异性 IgG 抗体比较有 4 倍以上的升高或下降到原来的 1/4 是 MP 感染的确诊依据[A]。

6. 有胸腔积液者应尽可能进行胸腔积液涂片染色与细菌培养[B]。

七、治疗

1. 原则

(1) 轻度 CAP 可以在门诊/家中治疗,由社区/乡镇医疗中心管理,如治疗 48 h 无效、高热不退,或病情恶化出现呼吸急促、呼吸困难、紫绀等,必须及时转诊治疗[C]。

(2)重度 CAP 应收住院治疗,选择区/县级及以上医院[C]。

2. 对症支持治疗

(1)海平面、呼吸空气条件下,$SaO_2 \leq 0.92$ 或 $PaO_2 \leq 60$ mm Hg(1 mm Hg = 0.133 kPa)应予吸氧[A];氧疗患儿应每 4 小时监测体温、脉率、RR 和脉搏血氧饱和度[C]。

(2)鼻胃管可能影响小婴儿的呼吸,尽可能选择小号胃管[C],少量多次喂食可减轻对呼吸的影响[B]。

(3)如必须静脉补液,总液量按基础代谢正常需要量的 80% 计算,补液种类应为 5% ~ 10% 葡萄糖溶液与生理盐水比例为 4 ~ 5∶1,应监测血清电解质[C]。

(4)胸部物理治疗无确切益处,不必常规采用[B]。

3. CAP 患儿无常规使用糖皮质激素的指征[C]

4. 抗病原微生物治疗(表 3)

表 2 社区获得性肺炎患儿病情严重度评估

临床特征	轻度 CAP	重度 CAP
一般情况	好	差
拒食或脱水征	无	有
意识障碍	无	有
呼吸频率	正常或略增快	明显增快[a]
紫绀	无	有
呼吸困难(呻吟、鼻翼扇动、三凹征)	无	有
肺浸润范围	≤1/3 的肺	多肺叶受累或≥2/3 的肺
胸腔积液	无	有
脉搏血氧饱和度	> 0.96	≤0.92
肺外并发症	无	有
判断标准	出现上述所有表现	存在以上任何一项

注:[a] 呼吸明显增快:婴儿 RR > 70 次/min,年长儿 RR > 50 次/min

表 3　儿童社区获得性肺炎常用抗微生物药物的剂量和用法

抗微生物药物	剂量及给药间隔[mg/(kg·次)]	最大剂量(g/次)	给药途径
青霉素类			
青霉素 G(penicillin G)	2.5 万~5.0 万 U/(kg·次),q 6 h		肌肉注射或静脉滴注
	大剂量 5.0 万~10.0 万 U/(kg·次), q 6 h		肌肉注射或静脉滴注
青霉素 V(penicillin V)	8~12,q 6~8 h		口服
氨苄西林(ampicillin)	常用剂量:15~25, q 6~8 h　大剂量: 50~75, q 6~8 h	2.0	口服或肌肉注射或静脉滴注
阿莫西林(amoxicillin)	常用剂量:10~15,q 6~8 h　大剂量: 25~30,q 6~8 h	2.0	口服
羧苄西林(carbenicillin)	25~50,q 6~8 h	2.0	肌肉注射或静脉滴注
美洛西林(mezlocillin)	75, q 6~8 h	3.0	肌肉注射或静脉滴注
哌拉西林(piperacillin)	25~50, q 6~8 h	2.0	肌肉注射或静脉滴注
苯唑西林(oxacillin)	25~50, q 6~8 h	2.0	静脉滴注
氯唑西林(cloxacillin)	12.5~25.0, q 6~8 h	2.0	静脉滴注
氨苄西林+舒巴坦 (ampicillin/sulbactam)	(规格:2:1 注射剂) (25.0/12.5)~(75.0/37.5), q 6~8 h	1.0/0.5	静脉滴注
阿莫西林+克拉维酸 (amoxicillin/clavulanic acid)	(规格:7:1 口服剂)(20.00/2.85)~(30.00/4.29),q 8 h (规格:5:1 注射剂)(25.00/5.00), q 6~8 h	1.0/0.143 1.0/0.2	口服 静脉滴注
替卡西林+克拉维酸 (ticarcillin/clavulanic acid)	(规格:15:1 注射剂) (50.00/3.34)~(75.00/5.00),q 6~8 h (规格:30:1 注射剂) (30.00/1.00)~(50.00/1.70),q 6~8 h	3.0/0.2 3.0/0.1	静脉滴注
哌拉西林+他唑巴坦 (piperacillin/tazobactam)	(规格:8:1 注射剂) 大于 9 月龄 100.0/12.5 q 8 h　2~9 月龄 80.0/10.0 q 8 h	4.0/0.5	静脉滴注
阿莫西林+舒巴坦 (amoxicillin-sulbactam)	(规格:2:1 注射剂)　按阿莫西林计算 30,q 6~8 h		肌肉注射或静脉滴注
头孢菌素类			
头孢拉定(cefradine)	6.25~12.50, q 6 h	1.0	口服
	12.50~25.00, q 6~8 h	1.0	肌肉注射或静脉滴注
头孢唑啉(cefazolin)	15~25, q 6~8 h	1.0	肌肉注射或静脉滴注
头孢羟氨苄(cefadroxil)	15~25, q 12 h	1.0	口服
头孢克洛(cefaclor)	10~15, q 8 h	0.5	口服
头孢丙烯(cefprozil)	7.5~15.0, q 12 h	0.5	口服
头孢地尼(cefdinir)	3~6, q 8 h	0.2	口服
头孢呋辛(cefuroxime)	10~15, q 12 h	0.75	口服
	15~25, q 6~8 h	1.0	肌肉注射或静脉滴注
头孢噻肟(cefotaxime)	50,q 8 h	2.0	静脉滴注
头孢曲松(ceftriaxone)	40~80, q d	2.0	肌肉注射或静脉滴注
头孢哌酮(cefoperazone)	15~50, q 8 h	2.0	肌肉注射或静脉滴注
头孢他啶(ceftazidime)	15~50, q 8 h	2.0	肌肉注射或静脉滴注
头孢哌酮+舒巴坦 (cefoperazone/culbactam)	(规格:2:1 注射剂) 常用剂量:(15.0/7.5)~(30.0/15.0) q 6 h~q 12 h 大剂量:(40.0/20.0)~(80.0/40.0)q 6 h~q 12 h	舒巴坦不超过 80.0 mg/(kg·d)	静脉滴注
头孢吡肟(cefapime)	30~50,q 8~12 h	1.5	肌肉注射或静脉滴注
大环内酯类			
红霉素(erythromycin)	10~15, q 8 h 10~15, q 12 h	0.5	口服 静脉滴注
罗红霉素(roxithromycin)	2.5~5, q 12 h	0.15	口服
阿奇霉素(azithromycin)	10 q d,连用 3 d	0.5	口服
克拉霉素(clarithromycin)	7.5, q 12 h	0.5	口服
其他			
多西环素(doxycycline)	8 岁以上,2.2,q 12 h(第一日),后 2.2~4.4,qd	0.1	口服
万古霉素(vancomycin)	10,q 6 h 或 20,q 12 h	0.5	静脉滴注
利奈唑胺(linezolid)	10,q 8 h	0.6	口服或静脉滴注
利福平(rifampin)	10~20,qd	0.3	口服
氨曲南(aztreonam)	30,q 6~8 h	0.5	肌肉注射或静脉滴注
厄他培南(ertapenem)	15,q 12 h	1.0	静脉滴注
亚胺培南(imipenem)	15~25,q 6 h	0.5	静脉滴注
美罗培南(meropenem)	10~20,q 8 h	0.5	静脉滴注
帕尼培南(panipenem)	轻症感染:10~20,q 8 h　重症或难治性感染:25~30,q 6~8 h	0.5	静脉滴注
克林霉素(clindamycin)	10,q 8~12 h	0.45	口服或静脉滴注
甲硝唑(metronidazole)	12.5,q 12 h	0.5	口服
	首剂 15.0,继之 7.5,q 6~8 h	1.0	静脉滴注

(1) 单纯病毒性肺炎无使用抗菌药物指征[B],但必须注意细菌、病毒、MP、衣原体等混合感染的可能性[C]。

(2) 有效和安全是选择抗菌药物的首要原则,轻度 CAP 可以口服抗菌药物治疗,不强调抗菌药物联合使用[A]。

(3) CAP 初始治疗均是经验性的。

轻度 CAP:3 个月以下儿童有沙眼衣原体肺炎可能,而 5 岁以上者 MP 肺炎、CP 肺炎比率较高,均可首选大环内酯类,若疑及 SP 混合感染,可联合阿莫西林口服[B]。对 4 月龄~5 岁 CAP,首选口服阿莫西林,也可以选择阿莫西林/克拉维酸(7:1 剂型)、头孢羟氨苄、头孢克洛、头孢丙烯、头孢地尼等[B]。如怀疑早期 SA 肺炎,应优先考虑口服头孢地尼[C]。

重度 CAP:多选择静脉途径给药。可以首选下列方案之一[B]:

① 阿莫西林/克拉维酸(5:1)、氨苄西林/舒巴坦(2:1)或阿莫西林/舒巴坦(2:1);② 头孢呋辛、头孢曲松或头孢噻肟;③ 怀疑 SA 肺炎,选择苯唑西林或氯唑西林,万古霉素不作首选;④ 考虑细菌合并有 MP 或 CP 肺炎,可以联合使用大环内酯类 + 头孢曲松/头孢噻肟。

(4)CAP 患儿口服抗菌药物是安全有效的[A],仅在重症肺炎或因呕吐等致口服难以吸收时才考虑胃肠道外抗菌药物疗法[B],抗菌药物序贯疗法有良好的推广前景[C]。

(5) 使用适当剂量的青霉素或阿莫西林对青霉素不敏感肺炎链球菌(PNSP)依然有效[B]。

(6)一旦明确病原微生物,应即开始针对性强的目标治疗[B]。

(7)初始治疗 48 h 后应作病情和疗效评估,CAP 抗菌药物疗程一般用至热退且平稳、全身症状明显改善、呼吸道症状部分改善后 3~5 d[C]。

(8)病毒性 CAP 的支持疗法、对症疗法和加强护理等仍居重要地位,而特异性病因治疗尚不多[C]。

5. 2%~12% 的 CAP 患儿有胸腔积液,最常见于细菌性肺炎(包括 SP、化脓性链球菌以及 SA 等)[B],积液量的多少和患儿呼吸窘迫的程度是决定治疗方案的重要因素[A]。

6. 儿科支气管镜术对于儿童重症或难治性肺炎的诊治有效[B]。

八、特异性预防

1. 对高危婴幼儿可给予 RSV 单克隆抗体(Palivizumab 等)预防治疗[C]。

2. 已有肺炎链球苗疫苗、b 型流感嗜血杆菌疫苗、流感病毒疫苗、百日咳疫苗等,疫苗的预防接种对减少 CAP 患病率效果肯定[A]。

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·会议·征文·消息·

吕鹤鸣纪念基金(中国)儿童肝病培训项目招收学员通知

为促进我国儿科肝病临床和科研水平的持续提高,以及在未来建立儿童肝病学术及合作研究网络,吕鹤鸣纪念基金(中国)决定在上海设立儿童肝病培训项目,现面向全国招收学员。经吕鹤鸣纪念基金(中国)评选委员会选定的学员将获得在上海复旦大学附属金山医院儿科和复旦大学附属儿科医院培训的机会。

1. 申请人条件:(1)中国大陆儿科医生,获得选送单位儿科主任或院长推荐。(2)至少 3 年儿科临床经验或已完成儿科住院医生规范化培训。(3)对小儿肝脏病学有浓厚兴趣。(4)同等条件下,优先考虑来自中西部及贫困地区的申请者。

2. 培训时间:每位学员培训时间为 12 个月。分别在每年 3 月及 9 月开始学习。

学员将有机会参加儿童肝病病房、门诊或研究工作,参加小儿肝病或儿科讲座,儿童肝病研究小组会议,病理学及影像学讲座。学员培训半年后需撰写中期报告陈述培训情况及研究工作计划,培训结束后需要递交终期报告及科研论著。基金将资助学员在上海期间生活费每月 3000 元;资助往来上海和学员家庭所在地的来往机票或车票;资助参加全国小儿肝病有关会议,包括路费、住宿费和注册费。

有兴趣者,请联系复旦大学附属金山医院儿科王建设教授,或 Email 至 jshwang@ shmu. edu. cn 垂询。

儿童社区获得性肺炎管理指南(2013修订)(下)

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