

- strain CVD908 expressing the circumsporozoite protein of *Plasmodium falciparum*: strain construction and safety and immunogenicity in human. *J Infect Dis* 1994; 169: 927
- 8 Chang SP, Gibson HL, Lee-NG C, et al. A carboxyl-terminal fragment of *Plasmodium falciparum* gp195 expressed by a recombinant baculovirus induces antibodies that completely inhibit parasite growth. *J Immunol* 1992; 149: 548
- 9 Chang SP, Case SE, Gosnell WL, et al. A recombinant baculovirus 42-kilodalton c-terminal fragment of *Plasmodium falciparum* merozoite surface protein 1 protects *Aotus* monkeys against malaria. *Infect Immun* 1996; 64: 253
- 10 Margos G, Kurtenbach K, Posnett E, et al. Expression of the *Plasmodium berghei* ookinete protein Pbs21 in a baculovirus-insect cell system produces an efficient transmission blocking immunogen. *Parasit Immunol* 1995; 17: 167
- 11 Maeda S. Further development of recombinant baculovirus insecticides. *Curr Opin Biotechnol* 1995; 6: 313
- 12 Jones I, Morikawa Y. Baculovirus vectors for expression in insect cells. *Curr Opin Biotechnol* 1996; 7: 512
- 13 Gordon DM, McGovern TW, Krzych U, et al. Safety, immunogenicity, and efficacy of a recombinantly produced *Plasmodium falciparum* circumsporozoite protein-hepatitis B surface antigen subunit vaccine. *J Infect Dis* 1995; 171: 1576
- 14 Barr PJ, Gibson HL, EnEa V, et al. Expression in yeast of *Plasmodium vivax* antigen of potential use in a human malaria vaccine. *J Exp Med* 1987; 165: 1160
- 15 Barr PJ, Inselburg J, Green KM, et al. Immunogenicity of recombinant *Plasmodium falciparum* SERA proteins in rodents. *Mol Biochem Parasitol* 1991; 45: 159
- 16 Duffy EP, Kaslow DC. A novel malaria protein Pfs18 and Pfs25 are genetically linked and synergistic as falciparum malaria transmission-blocking vaccines. *Infect Immun* 1997; 65: 1109
- 17 Sabin EA, Lee-NG CT, Shuster JR, et al. High level expression and *in vivo* processing of chimeric ubiquitin fusion proteins in *Saccharomyces cerevisiae*. *Biol Technol* 1989; 7: 705
- 18 Stover CK, Cruz VF de la, Fuerst TR, et al. New use of BCG for recombinant vaccines. *Nature* 1991; 351: 456-460.
- 19 Young JF, Hockmeyer WT, Gross M, et al. Expression of *Plasmodium* circumsporozoite proteins in *Escherichia coli* for potential use in a human malaria vaccine. *Science* 1985; 228: 958
- 20 Wang R, Charoenvit Y, Corrodin G, et al. Induction of protective polyclonal antibodies by immunization with a *Plasmodium yoelii* circumsporozoite protein multiple antigen peptide vaccine. *J Immunol* 1995; 154: 2784.
- 21 Crewther PE, Matthew MLSM, Flegg RH, et al. Protective immune response to apical membrane antigen 1 of *Plasmodium chabaudi* *in vivo* recognition of strain-specific epitopes. *Infect Immun* 1996; 64: 3310
- 22 Mason HS, Arntzen CJ. Transgenic plants as vaccine production systems. *Trend in Biotech* 1995; 13: 388
- 23 Turpen TH, Reinl SJ, Charovit Y, et al. Malarial epitopes expressed on the surface of recombinant tobacco mosaic virus. *Biol Technol* 1995; 13: 53
- 24 Khusmith S, Charoenvit Y, Kumar S, et al. Protection against malaria by vaccination with sporozoite surface protein 2 plus CS protein. *Science* 1991; 252: 715
- 25 Wang HH, Rogers WO, Kang Y, et al. Partial protection against malaria by immunization with *Leishmania enriettii* expressing the *Plasmodium yoelii* circumsporozoite protein. *Mol Biochem Parasitol* 1995; 69: 139
- 26 Sedegah M, Hedstrom R, Hobart P, et al. Protection against malaria by immunization with plasmid DNA encoding circumsporozoite protein. *Proc Natl Acad Sci USA* 1994; 91: 9866
- 27 Hoffman SL, Sedegah M, Hedstrom RC. Protection against malaria by immunization with a *Plasmodium yoelii* circumsporozoite protein nucleic acid vaccine. *Vaccine* 1994; 2: 1529
- 28 Hoffman SL, Doolan DL, Sedegah M. Strategy for development of a pre-erythrocytic *Plasmodium falciparum* DNA vaccine for human use. *Vaccine* 1997; 5: 842
- 29 Doolan DL, Sedegah M, Hedstrom RC. Circumventing genetic restriction of protection against malaria with multigene DNA immunization CD8⁺ cell, gamma-interferon, and nitric oxide-dependent immunity. *J Exp Med* 1996; 183: 1739
- 30 Gramzinski BA, Maris DC, Doolan D. Malaria DNA vaccines in *Aotus* monkeys. *Vaccine* 1997; 5: 913
- 31 Gookd MF, Kaslow DC, Miller LH. Pathways and strategies for developing a malaria blood-stage vaccine. *Ann Rev Immunol* 1998; 16: 57

1998年7月27日收稿 1999年6月4日修回
(编辑:任燕芬)

血液中查见异形吸虫卵一例

江苏省张家港市乐余中心医院 张家港 215621 孙建方 张卫清
镇江医学院 212001 金长顺 仇锦波

1999年5月我们从一慢性肾炎尿毒症患者的血液中查见异形吸虫卵。患者,男性,71岁,渔民。因反复浮肿20余年,间歇畏寒发热上腹痛10余年,近来加剧而入院。体检:心肺(-),肝脾未触及,肝区无叩击痛。血常规检查:白细胞正常,血红蛋白80g/L。尿常规检查:蛋白++,白细胞0~3/HP,肾功能检查:尿素氮24.88mmol/L,肌酐:502.7μmol/L。住院期间因畏寒发热末梢血液镜检查疟原虫时,查见吸虫科虫卵,虫卵经姬姆萨液染色后呈兰灰色,虫卵呈长椭圆形,前端较窄,卵壳较厚,无肩峰,后端无明显小棘,有卵盖,卵内含毛蚴,有的毛蚴不明显(图1)。测量血液中虫卵2个,大小分别为21.58μm×9.96μm及23.24μm×11.62μm。虫卵的长与宽之比为2~2.17。1周后追踪检查患者粪便,发现有同样虫卵存在。粪便中虫卵呈棕黄色,长椭圆形,前端略窄,卵壳较厚,无肩峰,有卵盖,内含毛蚴(图2)。分别测量粪便中虫卵3个,其大小为36.55μm×14.62μm、29.24μm×15.00μm、27.00μm×18.26μm。虫卵的长与宽之比为1.48~

2.51。血液中虫卵长、宽的最大径与粪便中虫卵相比,均明显短而窄。(本文图1及图2见封四)。

讨论

异形吸虫类成虫主要寄生于第二中间宿主——鱼类、鸟类及哺乳类动物体内(赵慰先主编.人体寄生虫学.第2版.北京:人民卫生出版社,1994:557)。近年发现福建及长江下游地区人类感染并不少见,患者为渔民,手污染或半生食鱼肉机会频繁,可能反复吞食本虫囊蚴而感染。本虫寄生于人体小肠,好钻入肠壁组织内排卵,因虫体虫卵微小,可进入微血管,到达全身各器官,引起心肌炎,脑脓肿,导致严重后果。但尚未见末梢血液查见吸虫科虫卵的报道。异形异形吸虫卵可在组织中找到,但未梢血中检测到的报告较少。该虫卵经鉴定为异形吸虫卵。后又经中国预防医学科学院寄生虫病研究所常正山研究员再一次确认。患者患慢性肾炎是否与本虫的虫卵沉积有关,尚在进一步研究。

1999年8月5日收稿 1999年8月26日修回
(编辑:李雅卿)