

- induced urinary bladder tumors [J]. *Carcinogenesis*, 2002, 23 (8): 1387-1397.
- [3] Brandau S, Bihle A. Bladder cancer. I. Molecular and genetic basis of carcinogenesis [J]. *Eur Urol*, 2001, 39 (5): 491-497.
- [4] Balansky RM, DeFloras. Chemoprevention by *N*-acetylcysteine of urethane induced clastogenicity and lung tumors in mice [J]. *Int J Cancer*, 1998, 77: 302-304.
- [5] James X Chen, Zhang YI, Melissa West, et al. Carcinogens preferentially bind at methylated CpG in the *p53* mutational hot spot [J]. *Cancer Res*, 1998, 58: 2070-2075.
- [6] French JE, Lacks GD, Trempus C, et al. Loss of heterozygosity frequency at the *Trp53* locus in *p53* deficient O mouse tumors is carcinogen and tissue dependent [J]. 2001, 22 (1): 99-106.
- [7] Rebassa Liull M, Guillemsanz Gadea C, Munoz Velez D, et al. Protein *p53* en carcinomas transicionales vesicales superficiales con distinta evolucion [J]. *Arch Esp Urol*, 1999, 52 (10): 1061-1064.
- [8] Ong F, Ioonen LI, Gallee IP, et al. Prognostic factors in transitional cell cancer of the bladder: an emerging role for *Bcl-2* and *p53* [J]. *Radiother Oncol*, 2001, 61(2): 169-175.
- [9] Miyake H, Hara I, Yamanaka K, et al. Synergistic enhancement of resistance to cisplatin in human bladder cancer by overexpression of mutant type *p53* and *Bcl-2* [J]. *J Urol*, 1999, 162 (6): 2176-2181.
- [10] Shiina H, Igawa W, Shigeno K, et al. Clinical significance of *mdm2* and *p53* expression in bladder cancer. A comparison with cell proliferation and apoptosis [J]. *Oncology*, 2000, 59 (1): 43-45.
- [11] Plastiras D, Ioutzounis G, Barbatis G, et al. Can *p53* nuclear overexpression, *Bcl-2* and *PCNA* status be of prognostic significance in highrisk superficial and invasive bladder tumour [J]. *Eur J Surg Oncol*, 1999, 25 (1): 61-65.
- [12] 陈修 来茂德. *p53* 突变、微卫星不稳定性与多药耐药 [J]. 国外医学遗传学分册, 1999, 22 (3): 137-142.
- [13] Torino JL, Burger MS, Reznikoff CA, et al. Role of TP53 in repair of *N*-(deoxyguanosin-8-yl)-4-aminobiphenyl adducts in human transitional cell carcinoma of the urinary bladder [J]. *Carcinogenesis*, 2001, 22 (1): 147-154.
- [14] Zhivolovsky B, Joseph B, Orrenius S. Tumour radiosensitivity and apoptosis [J]. *Exp Cell Res*, 1999, 248: 10-17.
- [15] Chen Z, Zhang Y, Zhang J, et al. Expression of multi drug-associated protein, glycoprotein, *p53* and *Bcl-2* proteins in bladder cancer and clinical implication [J]. *J Tongji Med Univ*, 2001, 21 (1): 56-58.
- [16] Shirakawa T, Sasaki R, Garder TA, et al. Drug-resistant human bladder cancer cells are more sensitive to adenovirus-mediated wild-type *p53* gene therapy compared to drug-sensitive cells [J]. *Int J Cancer*, 2001, 94 (2): 282-289.
- [17] Miyake H, Hara I, Hara S, et al. Synergistic chemosensitization and inhibition of tumour growth and metastasis by adenovirus-mediated *p53* gene transfer in human bladder cancer model [J]. *Urology*, 2000, 56 (2): 332-336.
- [18] Kuball J, Wen SF, Leissner J, et al. Successful adenovirus-mediated wild-type *p53* gene transfer in patients with bladder cancer by intravesical vector instillation [J]. *J Clin Oncol*, 2002, 20 (4): 957-965.
- [19] Wada Y, Gotoh A, Shirakawa T, et al. Gene therapy for bladder cancer using adenoviral vector [J]. *Mol Urol*, 2001, 5 (2): 47-52.

静脉补钙抢救氢氟酸中毒 1 例报告

A case of hydrofluoric acid poisoning treated by venous injecting of calcium gluconate

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患者,男,35岁,某仪器制造厂工人。工作中因制氢氟酸管道闸门破裂,含90%的氢氟酸气体喷出。患者吸入该气体数分钟后,出现呼吸困难、胸闷,并致面、颈、右前臂、双手氢氟酸灼伤,伴头晕、恶心、呕吐,2h后急诊入院。查体:T 36.4℃,P 120次/分,R 30次/分,BP 120/80 mmHg(16/10.6 kPa)。患者躁动不安,意识清楚,口腔粘膜苍白,局部见水疱,双肺呼吸音粗,心脏各瓣膜区听诊无病理性杂音,生理反射存在,病理反射未引出。专科情况:面、颈、右前臂、双手可见8%烧伤创面,其中面颈部皮肤红肿,表面有散在斑点状黑色坏死灶,右前臂、双手皮肤苍白,呈皮革样改变。入院诊断:(1)面颈、右前臂、双手氢氟酸烧伤(8%),Ⅲ度4%,深Ⅱ度4%。(2)急性氢氟酸气体中毒。

入院后立即补液、预防感染;静脉滴注10%葡萄糖酸钙10ml,超声雾化吸入(庆大霉素8万单位、地塞米松10mg、α-糜蛋白酶4000u+20ml生理盐水);行右前臂、双手切开减张引流;创面依次用10%氯化钙、10%硫酸镁、1.25%碳酸氢钠溶液

湿敷,以减轻中毒症状和中和酸对局部的损伤。入院实验室检查:血清Ca²⁺1.12 mmol/L,血清F⁻694.7 μmol/L,诊断为氢氟酸中毒。入院2h后予大剂量静脉补钙,10%葡萄糖酸钙40ml,每小时1次静脉滴注,共6次。伤后10h患者出现呼吸困难、躁动、心率160次/分,呼吸60次/分,双肺可闻及湿啰音,心尖部可闻及舒张期奔马律,考虑为中毒性肺水肿。给予西地兰0.4mg、地塞米松20mg、氨茶碱250mg、速尿60mg静脉注射及吸氧治疗,症状逐渐好转。伤后12h共补钙36g,复查血清Ca²⁺2.65 mmol/L,血清F⁻14.6 μmol/L,给予红细胞悬液及能量合剂支持治疗。后经两次植皮手术,住院60d痊愈出院。

讨论 氢氟酸烧伤除有强烈的腐蚀性外,还因F⁻强大的渗透性,可引发进行性组织液化、骨质脱钙。F⁻吸收后,与Ca²⁺结合,形成不溶性氟化钙,使血Ca²⁺浓度迅速降低,可引发低钙血症。

接触氢氟酸的人员宜穿戴防护衣裤、口罩、手套和眼镜。在使用氢氟酸的地方应备有水源以及含钙的外用溶液。一旦致伤在现场急救处理后,应立即送专科医院及时诊治。