

doi: 10.13241/j.cnki.pmb.2014.17.018

颅骨过度气化 1 例影像表现并文献复习 *

郑林丰^{1#} 庄浩良^{2#} 张贵祥^{1△}

(1 上海交通大学附属第一人民医院放射科 上海 200080; 2 同济大学附属第十人民医院口腔科 上海 200072)

摘要 目的: 颅骨过度气化(Craniocervical bone pneumatisation)比较少见, 近年来对其报道和认识逐渐增多。本文介绍一例偶然发现的颅骨过度气化的影像表现并对相关文献进行复习。方法: 分析我院 1 例颅骨过度气化的影像学图像。并从国外 pubmed 数据库(www.pubmed.gov)及国内中国知网数据库(www.cnki.net)查找发表的文献进行文献复习。结果: 颅骨过度气化表现为颅骨的气腔形成并局部膨出, 多为偶然发现或因并发症就诊, 可涉及颅盖骨、颅底骨及颈椎等, 近年来对其认识逐渐增多。结论: 颅骨过度气化尽管少见, 对征象的认知有助于相关科室医师正确识别此征象, 从而有利于临床一些相关疑难病例的诊断和操作并对防止漏、误诊具有一定的意义。

关键词: 颅骨过度气化; 影像学检查; 病例报告; 文献复习

中图分类号: R445, R76 **文献标识码:** A **文章编号:** 1673-6273(2014)17-3273-03

Craniocervical Bone Pneumatisation: A Case Report and Review of the Literature*

ZHENG Lin-feng^{1#}, ZHUANG Hao-liang^{2#}, ZHANG Gui-xiang^{1△}

(1 Department of Radiology, First People's Hospital, Shanghai Jiaotong University, Shanghai, 200080, China;

2 Department of Stomatology, Shanghai Tenth People's Hospital, Shanghai, 200072, China)

ABSTRACT Objective: Craniocervical bone pneumatisation is exceptionally rare, but there is a growing case reports of it from last century. Here we report one case of craniocervical bone pneumatisation which was diagnosed accidentally and presents the image result and review the literatures. **Method:** A 24-year-old male patient with craniocervical bone pneumatisation was found and his image results were reviewed. Also the literatures of craniocervical bone pneumatisation were retrieved and reviewed from pubmed library (www.pubmed.gov) and china knowledge resources library (www.cnki.net). **Result:** Skull X-ray and head computed tomography (CT) scan were obtained from the case, and extensive pneumatization of right temporal bone, part of occipital bone and parietal bone were seen in this image data. Also, in brain window images of head CT, reduction in temporal and occipital lobe volume was observed in right cerebral hemisphere. In literatures, the main image manifestation of craniocervical bone pneumatisation is extensive pneumatization and local bulging of skull. This varies greatly between cases and involved in cranium, skull base and even the cervical vertebrae. The vast majority of cases were found by incidental examination or complications resulting from it. There is growing reports in the literature so far. **Conclusion:** The incidence of craniocervical bone pneumatisation seems to be very low. However, to some extent, the enhancement of knowledges in these will help physicians to make easier recognition of cases or some clinical procedure, to make right diagnosis for intractable cases and to prevent the leakage and the misdiagnosis in related field diseases under some situation in clinical practice.

Key words: Craniocervical bone pneumatisation; Imaging examination; Case report; Literature review

Chinese Library Classification(CLC): R445, R76 **Document code:** A

Article ID: 1673-6273(2014)17-3273-03

前言

颅骨过度气化(Craniocervical bone pneumatisation)表现为颅骨的气腔形成并局部膨出, 其发生比较罕见。自 1905 年 McArthur 博士首次报道^[1]以来, 一个多世纪来对其认识逐渐增多。国内亦有部分文献报告^[2-7], 但对于其中文命名尚未统一一致, 有巨大气化型乳突^[2]、乳突气化过度^[3,4,7]、颅骨过度气化症^[5,6]等命名。此症多为偶然发现, 多数学者认为属于发育异常范畴,

但目前对其分歧日益增多^[6-10]。本文介绍一例偶然发现的颅骨过度气化的影像表现并对相关文献进行复习, 旨在使相关科室医师对其有所认识和对临床实践提供帮助。

1 临床资料

24 岁, 男性, 因“头外伤后头晕”要求行头颅平片和 CT 检查。临床检查未见明显阳性体征及神经系统阳性征象。影像学检查: 头颅正位片显示右侧颞骨及顶骨局部膨隆, 呈多发边界

* 基金项目: 国家留学基金资助; 上海交通大学附属第一人民医院“优秀青年人才”基金资助

作者简介: 郑林丰(1976-), 男, 主治医师, 博士, 主要从事医学影像学的医疗、科研及教学工作

电话: 13564769228, E-mail: zhenglinfeng04@aliyun.com, E-mail: zhenglinfeng.nu@gmail.com

共同第一作者

△ 通讯作者: 张贵祥, E-mail: guixiangzhang@sina.com

(收稿日期: 2014-01-09 接受日期: 2014-01-30)

清楚的低密度区(A)。头颅 CT 骨窗自颅底向上层面(B-F)显示右侧颞骨、部分顶骨及枕骨多发边界清楚含气透亮区,骨皮质

菲薄但尚光整。头颅 CT 脑窗显示右侧大脑半球颞、枕叶界面内移,体积变小未见颅内积气征。左侧乳突呈气化型乳突。

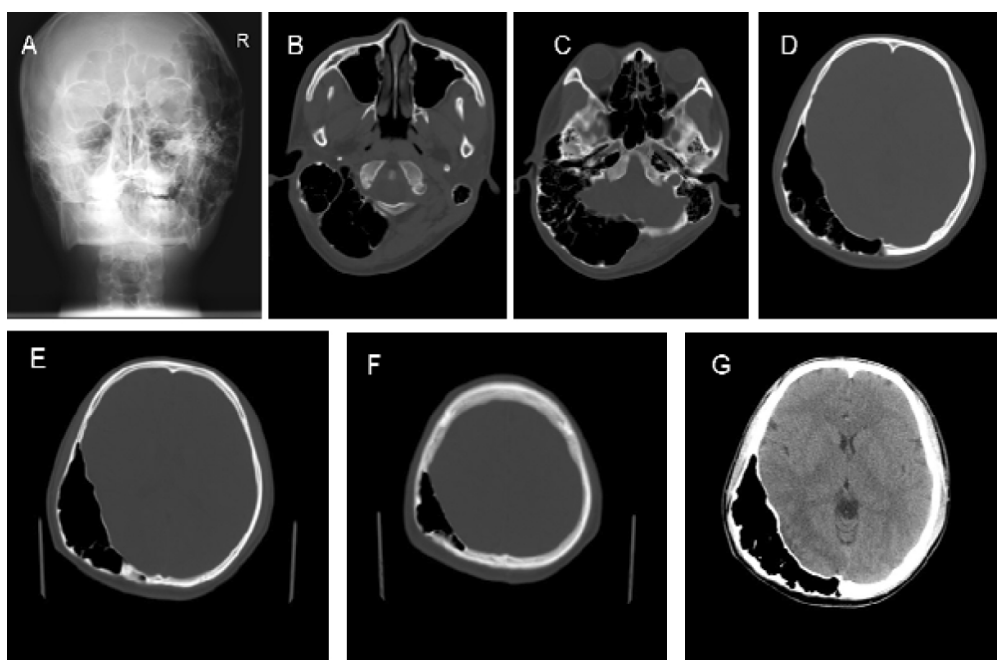


图 1 24 岁男性,因“头外伤”要求影像学检查。头颅正位片显示右侧颞骨及顶骨局部膨隆,呈多发边界清楚的低密度区(A)。头颅 CT 骨窗自颅底向上层面(B-F)显示右侧颞骨、部分顶骨及枕骨多发边界清楚含气透亮区,骨皮质菲薄但尚光整。头颅 CT 脑窗显示右侧大脑半球颞、枕叶界面内移,体积变小。图 A 中 R 示右侧

Fig.1 A 24-year-old man, skull X-ray(posterior-anterior projection) and head computed tomography(CT) scan are performed following trauma to the head. Extensive pneumatization of right temporal bone, part of occipital bone and parietal bone were seen in plain skull X-ray films (A) and bone window images in routine head CT (B-F). In brain window images in routine brain CT (G), reduction in temporal and occipital lobe volume was observed in right cerebral hemisphere. R in panel A=right

2 讨论及文献复习

2.1 颅骨的发育与气化

在胚胎发育过程中,颅面部的发育自胚胎 3-4 周开始,约 8 周颅面部基本形态形成。颅骨骨骼的发育通过软骨的间质及表面增生、骨缝的表面增生、骨的表面增生形式,在出生前及出生后至青春期完成颅面部的发育^[1]。正常颞骨的气化自出生前一周开始到青春期末尖气化后发育完成^[8,12]。如果颞骨鳞部的气化向后延伸到乙状窝考虑为发育变异^[8,12]。

2.2 颅骨过度气化的影像学表现

诸多文献报告颅骨过度气化多发于男性,单侧尤其右侧多见,发生部位可见于颞骨、枕骨、顶骨、上颈椎等^[8,13-15]。影像学检查包括颅骨平片、CT 及 MRI 检查,目前颅骨平片的应用日益减少^[10,16]。主要表现为颅骨内的气腔形成伴形态改变,影像学征象不尽一致,CT 上主要表现为边界清楚的、有硬化边的气腔,并可见线样钙化及散在脂肪及软组织密度^[10]。MRI 信号较复杂,可呈低、高信号及对比增强改变^[10]。出现相应并发症时有相应影像学改变。

2.3 颅骨过度气化的临床意义

目前多数研究认为颅骨过度气化是一种发育变异^[6,9,10,12],但部分特别是长期有 Valsalva 动作习惯、潜水作业人员及跳水人员的颅骨过度气化随时间进展,因此支持获得性理论假说^[13,17]。尽管此症多为意外发现,近年来文献显示因并发症如颅骨及上

颈椎骨折^[18]、皮下气肿^[15,19]、硬膜外积气^[3,20]、气囊肿^[19]、主观搏动性耳鸣^[21]等而诊断的病例日益增多。因此,在此症合并头外伤的病人,特别是仅做头颅 CT 检查的断面扫描时,要仔细分析影像征象,警惕伴发的气颅征象,必要时通过三维重建进一步观察排除,避免误诊和漏诊。陈硕等在人类胚胎标本发现,乳突气化过度是面神经缺损的主要原因^[22]。在 MRI 影像上,过度气化的乳突小房呈低信号且与颞下颌关节窝重叠,容易误诊为纤维化或骨病变从而影响到对颞下颌关节病的判断,特别是对有颞下颌关节手术史的病人,必要时建议做 CT 检查^[23]。因此,影像科医生在遇到此情况时除了要对相关科室医师做出提示诊断外,应重点分析有无可能发生的并发症的影像学改变,以免耽误病情。此外,影像科的及时报告有助于相关科室医师对于临床一些相关疑难病例的诊断和临床操作,并对防止漏、误诊具有一定的意义。

3 小结

颅骨过度气化尽管少见,对征象的认知有助于相关科室医师正确识别此征象,从而有利于临床一些相关疑难病例的诊断和操作并对防止漏、误诊具有一定的意义。

参考文献(References)

- [1] McARTHUR LL. Pneumatocoele of the cranium[J]. JAMA,1905,XLIV (18):1418-1423
- [2] 曹庆选. 巨大气化型乳突一例报告 [J]. 临床放射学杂志,1991,10

- (03):132-177
Cao Qing-xuan. A case report of excessive mastoid pneumatisation [J]. Journal of Clinical Radiology, 1991, 10(03):132-177
- [3] 韩晓东, 牛广明, 董勤. 乳突气化过度致皮下气肿及自发性气脑一例报告[J]. 医学影像学杂志, 1996, 5(03):137
Han Xiao-dong, Niu Guang-ming, Dong Qin. A case report of excessive mastoid pneumatisation result in subcutaneous emphysema and spontaneous pneumocephalus [J]. Journal of Medical Imaging, 1996, 5(03):137
- [4] 李宝明, 周文光, 李幼娥. 乳突过度气化并发枕部气囊肿一例[J]. 临床耳鼻咽喉科杂志, 1994, 8(04):253
Li Bao-ming, Zhou Wen-guang, Li You-e. A case report of excessive mastoid pneumatisation concurrent occipital pneumatocele [J]. J Clin Otorhinolaryngol, 1994, 8(04):253
- [5] 刘文耀, 郑文辉. 颅骨过度气化症 [J]. 新疆医学院学报, 1982, 5(Z1):309
Liu Wen-yao, Zheng Wen-hui. Craniocervical bone pneumatisation [J]. Xinjiang medical journals, 1982, 5(Z1):309
- [6] 刘文耀, 郑文辉. 颅骨过度气化症 2 例报告[J]. 中国神经精神疾病杂志, 1985, 11(05):271
Liu Wen-yao, Zheng Wen-hui. Craniocervical bone pneumatisation: two cases report[J]. Chin J Nerv Ment Dis, 1985, 11(05):271
- [7] 张汝华, 王凤琴. 乳突过度气化并发头顶枕部气囊肿致骨质缺损一例[J]. 临床耳鼻咽喉科杂志, 1995, 9(01):56
Zhang Ru-hua, Wang Feng-qin. A case report of excessive mastoid pneumatisation concurrent occipital pneumatocele result in bone defect [J]. J Clin Otorhinolaryngol, 1995, 9(01):56
- [8] Rebol J, Munda A, Tos M. Hyperpneumatization of the temporal, occipital and parietal bones[J]. Eur Arch Otorhinolaryngol, 2004, 261(8):445-448
- [9] Houet EJ, Kouokam LM, Nchimi AL. Skull base bone hyperpneumatization[J]. Jbr-btr, 2013, 96(3):185
- [10] Welker KM, DeLone DR, Lane JJ, et al. Arrested pneumatization of the skull base: imaging characteristics [J]. AJR Am J Roentgenol, 2008, 190(6):1691-1696
- [11] 林久祥. 口腔正畸学[M]. 北京: 人民卫生出版社, 2011
Lin Jiu-xiang. Orthodontics [M]. Beijing: People's Medical Publishing House, 2011
- [12] Wemhoff M, Jain R, Rock J. Hyperpneumatization of the skull base: case report [J]. Neurosurgery, 2012, 70 (3): E789-793; discussion E793-784
- [13] Germino JC, Medverd JR, Nguyen VT, et al. Craniocervical hyperpneumatization with concurrent pneumorrhachis, pneumomediastinum, and subcutaneous emphysema in a weightlifter [J]. Spine J, 2013, 13(10): e47-53
- [14] Zhang X, Jing M, Liang H, et al. Traumatic subperiosteal emphysema caused by hyperpneumatization of the temporal and occipital bone[J]. J Neuroimaging, 2013, 23(2):259-261
- [15] Turowski B, Rettig J, Raab P, et al. Cutaneous emphysema and craniocervical bone pneumatization [J]. AJNR Am J Neuroradiol, 2001, 22(7):1398-1400
- [16] Weber AL. Imaging of the skull base [J]. Eur J Radiol, 1996, 22(1): 68-81
- [17] Lacout A, Marcy PY, Carlier RY, et al. Pneumatization of the skull base due to valsalva maneuver [J]. Cleft Palate Craniofac J, 2013, 50(1):113-116
- [18] Petritsch B, Hahn D, Wendel F, et al. Dens fracture in a patient with extensive craniocervical bone pneumatization[J]. Diagn Interv Radiol, 2012, 18(5): 517-518
- [19] Moss M, Biggs M, Fagan P, et al. Complications of occipital bone pneumatization[J]. Australas Radiol, 2004, 48(2):259-263
- [20] Park P, Chandler WF, Telian SA, et al. Spontaneous chronic epidural pneumocephalus resulting from hyperpneumatization of the cranium causing mass effect: case report[J]. Neurosurgery, 1998, 42(6):1384-1386
- [21] Tuz M, Dogru H, Yesildag A. Subjective pulsatile tinnitus associated with extensive pneumatization of temporal bone [J]. Auris Nasus Larynx, 2003, 30(2):183-185
- [22] 陈硕, 邱治民, 邹宁生. 人面神经管和面神经的发生[J]. 解剖学报, 1988, 19(03):327-331+355
Chen Shuo, Qiu Zhi-min, Zou Ning-sheng. Development of facial nerve canal and facial nerve in Human [J]. Acta Anatomica Sinica, 1988, 19(03): 327-331+355
- [23] Hasnaini M, Ng SY. Extensive temporal bone pneumatization: incidental finding in a patient with TMJ dysfunction [J]. Dent Update, 2000, 27(4):187-189

(上接第 3222 页)

- [14] Sequeira A, Mamdani F, Ernst C, et al. Global brain gene expression analysis links glutamatergic and GABAergic alterations to suicide and major depression [J]. PLoS One, 2009, 4(8):e6585
- [15] Goff DC, Coyle JT. The emerging role of glutamate in the pathophysiology and treatment of schizophrenia [J]. Am J Psychiatry, 2001, 158(9):1367-1377
- [16] Arrue A, Davila R, Zumarraga M, et al. GABA and homovanillic acid in the plasma of Schizophrenic and bipolar I patients [J]. Neurochem Res, 2010, 35(2):247-253
- [17] Zhang ZJ, Reynolds GP. A selective decrease in the relative density of parvalbumin-immunoreactive neurons in the hippocampus in schizophrenia [J]. Schizophr Res, 2002, 55(1-2):1-10
- [18] Lewis DA, Hashimoto T, Volk DW. Cortical inhibitory neurons and schizophrenia[J]. Nat Rev Neurosci, 2005, 6(4):312-324
- [19] Fatemi SH, Sary JM, Earle JA, et al. GABAergic dysfunction in schizophrenia and mood disorders as reflected by decreased levels of glutamic acid decarboxylase 65 and 67 kDa and Reelin proteins in cerebellum[J]. Schizophr Res, 2005, 72(2-3):109-122
- [20] Cai HL, Zhu RH, Li HD, et al. Elevated plasma gamma-aminobutyrate/glutamate ratio and responses to risperidone antipsychotic treatment in schizophrenia [J]. Prog Neuropsychopharmacol Biol Psychiatry, 2010, 34(7):1273-1278