

记广西崇左硕豪猪(*Hystrix magna* Pei, 1987)一头骨化石

郭建崑

(中国科学院古脊椎动物与古人类研究所 北京 100044)

摘要 产于广西崇左早更新世(?)洞穴堆积中的一大型豪猪被归入 *H. magna*, 从而补充了该种的特征, 并依此与 *Hystrix* 属中已知各种作了较全面的比较和讨论。

关键词 广西崇左, 早更新世(?), 豪猪科

中图法分类号 Q915.873

一、前言

豪猪科(Hystricidae)是生存在旧大陆上的最为成功、分布范围最广的一类豪猪型啮齿动物(Landry, 1957)。现生种类分为三个属, 即长尾豪猪属(*Trichys*)、帚尾豪猪属(*Atherurus*)和短尾豪猪属(*Hystrix*)(van Weers, 1983); 此外尚有一与 *Atherurus* 在分类上最为接近的化石属 *Sivacanthion*, 出现在印度 Chinji 的下上新统(Landry, 1957)。

Trichys 属仅一种, 即 *Trichys fassiculata*, 分布在东南亚的苏门达腊岛、婆罗洲岛以及马来半岛南部(van Weers, 1976); 化石记录仅有我国贵州桐梓挖竹湾洞中更新世早期的 *T. cf. fassiculata* (郑绍华, 1993)。

Atherurus 仅两种。*Atherurus macrourus* 分布在我国长江以南地区、印度支那半岛和马来半岛; *A. africanus* 分布在非洲中部(Elleman, 1940; van Weers, 1977; 1983)。*A. macrourus* 的地史记录可上溯到早更新世(广西柳城巨猿洞), 其后在我国长江以南地区广有分布(郑绍华, 1993)。

豪猪科中最为进步、种类最为繁多、分布范围最为广阔的类群当数 *Hystrix* 属。其现生种类分布范围包括亚非两大洲的整个热带、亚热带地区以及南欧的意大利等地(Elleman, 1940; van Weers, 1978; 1979; 1983)。迄今所知最早的化石记录为我国云南禄丰晚中新世的 *Hystrix* sp. (邱铸鼎等, 1985)和欧洲许多晚中新世地点的 *H. primigenia*, 后者延续到早更新世(van Weers, 1994)。这说明 *Hystrix* 属早在晚中新世已成为广泛分布的类群。此后在晚上新世, *H. refossa* 出现在欧洲并延续到晚更新世(van Weers, 1994); *H. indica* (Synonyms: *H. leucurus* *H. sivalensis* et al.) 出现在印度(Elleman & Morrison-Scott, 1951; Landry, 1957)。到了更新世, *H. vinogradovi* 成为欧洲众多动物群中的常见成员; *H. lagrelii* 在早更新世出现在我国河南浉池、北京周口店(第9地点)

和印尼的爪哇(郑绍华, 1993; van Weers, 1994; 1995); *H. gigantea* 也在爪哇被发现(van Weers, 1985); *H. brachyura* (Synonyms: *H. hodgsoni*; *H. subcristata et al.*) 从早更新世出现开始一直是我国南方众多更新世动物群中的常见分子(van Weers, 1979; 郑绍华, 1993); *H. magna* 的一些单个牙齿化石被发现于我国广西柳城巨猿洞以及四川巫山大庙龙骨坡的早更新世裂隙堆积中(裴文中, 1987; 郑绍华, 1993)。

本文记述的豪猪头骨, 为中国科学院古脊椎动物与古人类研究所广西壮族自治区工作队于1956年在广西崇左县新和区独头山独头洞中发现。与广西队所考察发现的其它材料比较, 年代似为早更新世(裴文中, 1965; 1987)。头骨特征符合 *Hystrix* 属, 但其中除 *H. magna* 以外的已知各种的特征均不同, 明显大于同地区发现的同时代的 *H. brachyura*; 尽管牙齿全部破损, 但左 P4 齿槽的长度和宽度与同地区、同时代且同样为大型豪猪的 *H. magna* 的左 P4 的长度和宽度接近。因此本文暂将崇左标本归入此种。

二、化石记述

啮齿目 Rodentia Bowdich, 1821

豪猪形亚目 Hystricomorpha Brandt, 1885

豪猪科 Hystricidae Buraell, 1830

短尾豪猪属 *Hystrix* Linnaeus, 1758

硕豪猪 *H. magna* Pei, 1987

(图版 I)

原订特征 形体较大, 齿冠较低, P4 和 p4 舌侧褶沟比唇侧的浅, 牙根生长相对较早, P4 前端少变狭(裴文中, 1987; 郑绍华, 1993)。

归入标本 一基本完整的头骨, 部分门齿及全部颊齿未保留(中国科学院古脊椎动物与古人类研究所编号: V10999)。

修订特征 头长仅小于 *Hystrix primigenia* 和 *H. refossa*, 与 *H. africae australis* 和 *H. cristata* 接近, 大于 *Hystrix* 属已知其它各种。头高在 *Hystrix* 属中最大。鼻骨后端超过泪骨后缘。后部呈圆弧状, 比前部宽大不明显, 不同于 *Hystrix* 属中除 *H. brachyura* 外的其它各种; 但鼻骨比 *H. brachyura* 者上隆强烈, 相对宽度亦大。前颌骨鼻突较窄, 末端楔形。鳞骨在额—顶缝下方呈显著的丘状隆起。枕部轻微后突, 侧枕脊与枕脊平行, 长而发达, 副枕突末端未达枕髁下缘水平。基枕骨正中骨脊两侧各具一疣状突起。听泡前端呈钝的尖凸状, 其上与翼内突后端相对处形成一低的脊状突起。颊齿较大, 齿冠较低, P4 和 p4 舌侧褶沟比唇侧的浅, 牙根生长相对较早, P4 前端不很狭小。

描述 骨缝深度愈合, 示其为老年个体。鼻骨前端、两侧颧弓、左侧臼齿齿槽及所在上颌骨、翼骨、翼蝶骨以及左侧部分眶蝶骨破损, 其余部分保存完好。

背面视: 头骨从眶后突(若不考虑颧弓, 此处为头骨最宽处)向前缓慢收缩, 后部顶区较窄。鼻骨前端破损, 但仍显出其长度相当长, 后端超过泪骨后缘; 鼻骨最宽处位于鼻—额—上颌骨缝相交处, 由此向前收缩缓慢、向后呈圆弧形; 鼻中缝中段愈合。额骨前缘中凹, 因此额中缝相当短; 额骨较宽; 眶后突不强但仍可见, 无明显的眶后收缩;

额脊显著, 从眶后突向后内方延伸, 与头骨矢状线约成 45 度角相交, 并从顶骨中部向后交汇成显著发达的矢状脊。顶骨相对于额骨显窄; 矢状脊之前的部分小而平, 三角形; 后部大, 构成从矢状脊向外侧凹斜的颞部; 顶骨后缘以发达的顶脊与枕骨相接。顶间骨已与顶骨完全愈合。

侧面视: 鼻骨, 尤其在后部与额骨相接处(此点为头骨最高点), 向上强烈隆起, 因此鼻骨很高, 并使得头骨背部矢状线呈显著拱形。上颌骨颧突上支保存较好, 粗壮, 位于 M1 和 M2 之上; 下支破损, 基部显扁平, 位于 P4 之前, 示眶下孔相当大; 眶下脊显著, 向前一直延伸到门齿齿槽之后。泪骨后部破损, 颧骨残缺, 但从右侧残留的上颌骨颧突仍可看出颧骨不与泪骨相接触。鳞骨颧突沿与颧骨相接的骨缝有一条发达的骨质脊, 其走向大致与额脊平行, 后端达额一顶缝下方, 并形成一丘状突起; 此脊与颞脊之间, 鳞骨颧突上还有一显著的骨质脊, 与前者平行。枕骨仅略后突。

腹面视: 前颌骨和上颌骨在眶下脊之上部分相当宽, 而在颞部较窄。门齿孔短, 长度不到齿缺的 1/5; 后缘位于齿缺的 1/2 处, 前颌—上颌骨缝之间。腭骨破损, 仅右侧与上颌骨相接处有残留, 可看出其水平部游离缘位于 M2 末端之前。前蝶骨与基蝶骨、基蝶骨与基枕骨之间骨缝均愈合; 基枕骨后部在正中骨脊两侧各有一疣状突起。枕

表 1 *H. magna* 头骨(V10999)测量及其与 *H. brachyura*(Q)的对比(测量方法依 van Weers, 1976: 17-19 & 1978: 18) (单位: 毫米)

Table 1 Measurements of the skull of *H. magna* (V10999) and comparison with *H. brachyura* (Q) (Defined by van Weers, 1976: 17-19 & 1978: 18) (in mm)

	<i>H. magna</i>	<i>H. brachyura</i>
鼻端—枕端长 L. occ.—nas.	>161.8	131.2
头基长 L. basilar sk.	137.7	113.5
头高 H. sk	71.8	54.2
额骨长 L. frontals	35.1	27.6
颞长 L. palatal	74.4	62.2
齿缺长 L. diastema	44.3	37.7
鼻骨后部宽 Br. nas. post	55.9	42.5
眶后宽 Br. postorb.	70.1	47.2
听泡长 L. bullae	21.0	18.5
*右上齿列长 Alv. P4—M3 (right)	38.0	27.7
*左 P4 长: 宽 L.: Br. P4 (left)	10.0: 11.0	6.5: 9.1
*右 P4 长: 宽 L.: Br. P4 (right)	10.5: 10.0	6.5: 9.1
*右 M1 长: 宽 L.: Br. M1 (right)	7.0: 10.2	7.5: 8.3
*右 M2 长: 宽 L.: Br. M2 (right)	6.8: 9.6	7.5: 7.7
*右 M3 长: 宽 L.: Br. M3 (right)	~ 9.0: 8.8	6.5: 6.2
头基长 / 头高 H. sk / L. basilar sk.	0.521	0.478

* 均为齿槽测量数据 Measurements of the alveoli.

L. Length; Br. breadth; H. height

髌略向后突出。听泡小，长度不及头长的 $1/7$ ，前端呈钝的突状；其上与翼内突后端（已破损而无法看到）相对处（参考 *H. brachyura* 的情况判断）形成一低的脊状突起。

左侧保留 P4 齿槽，长 10.0mm，宽 11.0mm；右侧整列齿槽存留，P4—M3 长 38.0mm，P4（齿槽长 10.5mm，宽 10.0mm）大于 M1 和 M2，M1、M2 宽短，M3 较长。

后面视：枕部骨骼已愈合成一块。枕脊、顶脊和鼓骨上脊均发达；侧枕脊与枕脊平行。长而发达，下端达枕大孔上缘水平。枕大孔近五边形，高、宽相当，高度仅略大于枕高的 $1/3$ 。副枕突末端破损，但残留部分显示其末端未达到枕髌下缘水平。

头骨测量见表 1。

三、比较讨论

崇左标本的下列性状——头骨背缘拱形，鼻、额区较宽，鼻骨相当长，无明显的眶后收缩，矢状脊显著，眶下孔相当大，泪骨不与颧骨接触，门齿孔短，距齿列前缘较远，听泡小——说明其无疑属于 *Hystrix* 属。左 P4 齿槽长、宽均与发现于同地区同时代且仅由 P4 和 p4（迄今无其它材料发现）确定的 *H. magna* 的左 P4 之长、宽接近，因此本文暂将其归入此种。基于此，以下将 *H. magna* 与 *Hystrix* 属内其它各种予以比较讨论。

1. 与 *H. brachyura* 的比较

鼻骨及其周围骨骼的形态是 *Hystrix* 属中重要的鉴定特征，鼻骨伸长、膨大、隆起或是鼻骨周围骨骼形态变化造成的鼻腔扩大是 *Hystrix* 属的一个重要进化趋势（另一个进化趋势是牙齿由低冠型向高冠型发展）（Lounberg, 1924; Ellerman, 1940; Landry, 1957）。*H. magna* 鼻骨相对长，后端超过泪骨后缘，与 *H. brachyura* 一致。加之二者均最早出现于同时代的许多广西洞穴堆积中，因此探讨二者的关系极为重要。为此笔者重新观察了 V5082 和 V5083 号标本。但是这两个化石头骨均有不同程度的破损变形，对比起来有一定困难，笔者又观察了六个现生 *H. brachyura* 头骨，其中一个采自陕西秦岭南麓，在此以 Q 表示；另外五个由昆明动物所提供，采自云南各地，标本编号分别为：640258、640259、勐 207、76355 和 631426。640258 号标本头骨很小，所有骨缝均未愈合，M3 尚未萌出，显然是一幼年个体；秦岭标本和 631426 号标本骨缝愈合程度和颊齿磨蚀程度均较深，应为老年个体；其余三个头骨骨缝愈合程度和颊齿磨蚀程度居中，为成年个体。年龄由小至老的顺序为：640258 < 640259 < 勐 207 < 76355 < Q < 631426。这一标本系列所显示的 *H. brachyura* 头骨随年龄增长而发生的形态变化主要有：（1）头骨相对宽度有增大趋势；（2）头骨背缘在最高点之前由隆起到扁平。其余个体差异似与年龄无关。崇左化石骨缝愈合状况显示其年龄与秦岭标本更为接近。因此，作者将秦岭标本作为崇左标本的主要对比参照物，其余现生种标本仅作参考。

H. magna 与 *H. brachyura* 的不同在于：（1）个体显著较大；（2）头骨较宽、较高；（3）鼻骨相对较宽较高；（4）前颌骨鼻突较窄，后端呈楔形而不是平截形；（5）鳞骨在额—顶缝下方具更显著的丘状隆起；（6）枕骨后部少向后突出；（7）侧枕脊较长而发达，与枕脊平行；（8）枕骨大孔相对较小；（9）副枕突较短，末端未达枕髌下缘水平；（10）听泡前端呈钝的尖凸状，其上与翼内突后端相对处形成一低的脊状突起；而 *H. brachyura*

在该位置上形成较大较高的不规则突起, 使听泡前端呈起伏的不规则面; (11)M1 和 M2 较宽短(根据齿槽推测); (12)齿冠较低(裴文中, 1987; 郑绍华, 1993)。

在(1)、(2)、(3)点上 *H. magna* 比 *H. brachyura* 进步, 但在(12)点上 *H. magna* 比后者原始。由于 *H. magna* 仅局限于早更新世, 而且迄今所发现的数量极少, 因此推测 *H. magna* 是 *Hystrix* 属在早更新世出现的一个非常特化的进化旁支。

2. 与 *H. cristata* (特征依 Ellerman, 1940 & van Weers, 1979) 的比较

头骨大型与 *H. cristata* (头长 111 - 156mm) 接近。

不同的是: (1)头骨相对高度(头高 / 头长 = 52.2%) 大于 *H. cristata* (36.8%); (2)鼻骨长度、宽度均小于 *H. cristata*; (3)齿冠较低。上述(1)显示 *H. magna* 比 *H. cristata* 进步, 而(2)、(3)比 *H. cristata* 原始。

3. 与 *H. africaeustralis* (特征依 Ellerman, 1940 & van Weers, 1979) 的比较

相似点为头骨大型(*H. africaeustralis* 头长 129 - 148mm)、鼻骨较长。

不同之处是: (1)头骨高度大于 *H. africaeustralis* (后者头高 / 头长 = 34.5%); (2)*H. magna* 鼻骨不特别宽, 且前后宽度接近; *H. africaeustralis* 鼻骨很宽, 且后部比前部宽度显著增大; (3)齿冠较低。上述(1)显示 *H. magna* 比 *H. africaeustralis* 进步, 而(2)、(3) *H. magna* 比 *H. africaeustralis* 原始。

4. 与 *H. indica* (特征依 Ellerman, 1940 & van Weers, 1979) 的比较

(1)头骨略大于 *H. indica* (后者头长 116 - 135mm); (2)头骨高度大于 *H. indica* (后者头高 / 头长 = 35.2%) (3)鼻骨较长; (4)前颌骨鼻突显著较窄; (5)齿冠较低。其中(1)、(2)、(3)显示 *H. magna* 较 *H. indica* 进步, (4)、(5)表明比后者原始。

通过(3)、(4)两点上的差异, 可发现两种豪猪通过不同的进化方式达到了共同的功能效果, 即扩大了鼻腔容积。现生 *Hystrix* 属中的多种成员(*H. cristata*, *H. africaeustralis*, *H. indica* 和 *H. brachyura*) 均生活于山区林间, 都有掘穴而居或是利用天然岩缝洞穴为巢的习性。这样的生活方式需要敏锐的嗅觉以利于在幽暗的环境中寻找食物和躲避敌害。鼻腔容积的扩大增加了嗅觉器官的面积, 正是对需要敏锐嗅觉的生活方式的适应。反过来可以推测, *H. magna* 当时的生境当与上述现生种类接近。

H. magna 虽然鼻腔容积增加, 但原始的低冠齿限制了其取食更为广泛的食源的能力, 因此其竞争力不及上述各现生种。这可能是它没有能够继续发展的重要原因。

5. 与 *H. javanica*、*H. lagrelü* 及 *Thecurus* 亚属(特征依 Ellerman, 1940; Lounberg, 1924; van Weers, 1978; 1979 & 1995) 的比较

(1)头骨远大于 *H. javanica* (枕—鼻长 103.8 - 127.5mm)、*H. lagrelü* (枕—鼻长约 100mm) 和 *Thecurus* (头长 75.2 - 102.4mm); (2)鼻骨显著长, 更宽, 更向上强烈隆起; *H. javanica* 和 *H. lagrelü* 鼻骨较短(后端仅达眶下孔上支水平), 较窄, 相当平; *Thecurus* 鼻骨短(后端不超过眶下孔前缘), 窄, 很平; (3)齿冠较低; *H. javanica*、*H. lagrelü* 和 *Thecurus* 均为高冠齿。

6. 与 *H. primigenia* (特征依 van Weers, 1994) 的比较

齿冠较低是两者的共同点。

不同点是: *H. magna* 头骨显著小于 *H. primigenia* (枕—鼻长 175mm)。

7. 与 *H. refossa* (特征依 van Weers, 1994) 的比较

(1) 头骨显著小于 *H. refossa* (头长 155mm); (2) 头骨相对高度大于 *H. refossa* (头高 / 头长 = 31.0%); (3) 齿冠较 *H. refossa* 低。

8. 与 *H. gigantea* (特征依 van Weers, 1985) 的比较

两者牙齿均较大, 但 *H. magna* 齿冠较 *H. gigantea* 低。

9. 与 *H. vinogradovi* (特征依 van Weers, 1994) 的比较

齿列长度远大于 *H. vinogradovi* (28.5mm)。

10. 与 *Hystrix* sp. (Qiu, 1985) (特征依郑绍华, 1993) 的比较

(1) 个体较 *Hystrix* sp. 大; (2) 齿冠(半高冠型)较 *Hystrix* sp. 明显高。这说明 *H. magna* 比 *Hystrix* sp. 进步。

由于崇左标本未保留颊齿, 将其归入 *H. magna* 的理由是间接的, 尚需发现更完整的化石来验证。

致谢 本文得到李传夔、郑绍华、邱铸鼎、郑家坚诸位先生的指导和帮助, 李传夔先生将标本交由笔者研究, 北京大学潘文石先生、吕植小姐和昆明动物研究所王应祥先生提供用以对比的现生动物标本, 张杰先生照相。在此谨向上述各位致以衷心的感谢。

参 考 文 献

- 邱铸鼎, 韩德芬, 祁国琴等, 1985. 禄丰古猿地点的小哺乳动物化石. 人类学学报, 4(1): 13—22
- 郑绍华, 1993. 川黔地区第四纪啮齿类. 北京: 科学出版社, 109—125
- 裴文中, 1965. 柳州巨猿洞的发掘和广西其它山洞的探查. 中国科学院古脊椎动物与古人类研究所甲种专刊第七号, 1—35
- 裴文中, 1987. 广西柳州巨猿洞及其它山洞之食肉目、长鼻目和啮齿目化石. 中国科学院古脊椎动物与古人类研究所集刊第 18 号, 84—90
- Ellerman J R, 1940. The families and genera of living rodents. *Brit. Mus. (Nat. Hist.), London*, 1(1-11): 1—689
- Ellerman J R, Morrison-Scott T C S, 1951. Checklist of Palaearctic and Indian mammals, 1758—1946. ed. 2. *Brit. Mus. (Nat. Hist.), London*, 1—810
- Lounberg E, 1924. On a new fossil porcupine from Honan with some remarks about the development of the Hystricidae. *Paleontol. Sin., Ser. D*, 1(3): 1—15
- Landry S O, 1957. The interrelationships of the New and Old World hystricomorph rodents. *Univ. Calif. Publ. Zool.*, 56: 1—118
- Weers D G van, 1976. Notes on Southeast Asian Porcupine (Hystricidae, Rodentia) I. On the taxonomy of the genus *Trichys* Gunther, 1877. *Beaufortia*, 25(319): 15—31
- Weers D G van, 1977. Notes on Southeast Asian Porcupine (Hystricidae, Rodentia) II. On the taxonomy of the genus *Atherurus* F. Cuvier, 1829. *Beaufortia*, 26(336): 205—230
- Weers D G van, 1978. Notes on Southeast Asian Porcupine (Hystricidae, Rodentia) III. On the taxonomy of the subgenus *Thecurus* Lyon, 1907 (genus *Hystrix* Linnaeus, 1758). *Beaufortia*, 28(344): 17—33
- Weers D G van, 1979. Notes on Southeast Asian Porcupine (Hystricidae, Rodentia) IV. On the taxonomy of the subgenus *Acanthion* F. Cuvier, 1823 with notes on the other taxa of the family. *Beaufortia*, 29(356): 215—272
- Weers D G van, 1983. Specific Distinction in Old World Porcupines. *Zool. Garten N. F.*, 53(3/5): 226—232
- Weers D G van, 1985. *Hystrix gigantea*, a new fossil porcupine species from Java (Rodentia: Hystricidae). *Senckenbergiana Lethaea*, 66(1/2): 111—119
- Weers D G van, 1993. Teeth morphology and taxonomy of the Miocene rodent *Anchitheriomys suevicus* (Schlosser, 1884),

with notes on the family Hystricidae. *Proc. K. Ned. Akad. Wet.*, **96**(1): 81—89

Weers D G van, 1994. The porcupine *Hystrix refossa* Gervais, 1852 from the Plio-Pleistocene of Europe, with notes on other fossil and extant species of the genus *Hystrix*. *Scripta Geol.*, **106**: 35—52

Weers D G van, 1995. The fossil porcupine *Hystrix lagrelii* Lonnberg, 1924 from the Pleistocene of China and Java and its phylogenetic relationships. *Beaufortia*, **45**(2): 17—25

NOTE ON A FOSSIL SKULL OF *HYSTRIX MAGNA* PEI, 1987 (RODENTIA, MAMMALIA) FROM CHONGZUO, GUANGXI

GUO Jianwei

(*Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences Beijing 100044*)

Key words Chongzuo, Guangxi, Early Pleistocene(?), Hystricidae

Summary

Here described a skull of *Hystrix* collected by Guangxi Investigation Team of IVPP in 1956 from the Pleistocene fissure filling of the Dutou Cave, Chongzuo, Guangxi.

The specimen shows differences from the all known species with the skulls. Though no tooth was preserved, the length and the width of the alveolus of left P4 (10.5mm & 11.0mm) are very similar to the measurements of left P4 of *H. magna*, which was also found in the Early Pleistocene deposit in the caves of Guangxi. So the specimen is referred to *H. magna* temporally.

Material A slightly broken skull without any tooth (IVPP V10999).

Geological age Early Pleistocene (?).

Revised diagnosis Skull, highest in the genus, shorter than *H. primigenia* and *H. refossa*, and similar to *H. africae australis* and *H. cristata* in length; nasal different from other species in the genus except only from *H. brachyura* by that it extending backward over the lachrymal in a rounded edge, rear not notably wider than front; but the nasal uplifting more strongly than *H. brachyura* with a larger relative width; the nasal process of the premaxilla quite narrow with a wedge-shaped end; obvious dune-like process below the joint point of the frontal, the parietal and the squamosal; the occipital part slightly protruding postward; paraoccipital crest, parallel to the occipital crest, developed and long; the paraoccipital process not down to the level of the lower margin of the occipital condyle; two wart-like processes on both sides of the rear central crest of basioccipital; the crown of the cheek teeth quite short (hemi-hypsodont); the bullae, with a stout cone-shaped anterior margin, having a low crest at where opposing to the post end of the inner alisphenoid process; lingual folds more shallow than lateral folds both in P4 and p4; tooth roots appearing rather early; P4 hardly narrower in front than in rear (the

tooth characters defined by Pei (1987) and Zheng (1993)).

Description Judging from fused suture, the skull without any tooth should be an old individual. Both zygomatic, left alveolar foramen of cheek teeth, left palatine, alisphenoid, left orbitalsphenoid and pterygoid are partly or completely damaged.

From dorsal view, both sides of the nasals extend quite parallelly from anterior to posterior and end behind the lachrymal in a rounded edge. The postorbital process is weak but visible. No noticeable interorbital contrast exists. The frontal crests are strong, extending backward and gradually inward from the postorbital processes to the center of the parietal at where fusing into a strong sagittal crest. The parietal, relatively short and narrow, slopes from the sagittal crest to the temporal. The nuchal crest is strong. The interparietal is completely fused with the parietal.

From lateral view, the dorsal edge of the skull strongly uplifts at where the nasal joints with the frontal. The wedge-shaped end of the nasal process of the premaxilla extends to the root of upper bar of the infraorbital foramen. Judging from broken roots, the upper bar of the infraorbital foramen is stout and located above M1 and M2, and the flattened and slender lower bar before P4. The infraorbital crest reaches forward to the alveolar of incisor. The jugal does not approach to the lachrymal. There is a developed crest parallel to the frontal crest along the squamosal-frontal suture. This crest ends in a dune-like process below the point where the frontal joints with the parietal and the squamosal.

From ventral view, the incisor foramen is less than $1/5$ of the diastema in length and its posterior margin is at the premaxilla-maxilla suture or at the middle of the diastema. The width of rostrum is obviously smaller on the gnathas than on the nasal part. The horizontal free fringe of palatine is located before the posterior end of M2. Two wart-like processes exist on both sides of the rear central crest of basioccipital. The occipital condyle slightly projects backward. On the bullae, which is relatively small with a stout cone-shaped anterior margin, a low crest exists at where opposing to the post end of the inner alisphenoid process.

By the right alveolus of P4-M3 which are preserved rather well, it can be inferred that the P4 is obviously larger than M1 and M2 while M1 and M2 show relatively wide and short. M3 shows relatively narrow and long. The alveolus of left cheek teeth are damaged except for P4.

From occipital view, occipital crest, nuchal crest and supratympanic crest are very developed. The paraoccipital crest, parallel to the occipital crest, is strongly developed and so long that extends downward to the level of upper margin of the foramen magnum. The foramen magnum is nearly pentagon and is $1/3$ high of the occipital. The paraoccipital process is short and does not extend to lower margin of the occipital condyle.

The measurements are shown in Table 1.

Comparison and discussion Chongzuo specimen undoubtedly belongs to the genus *Hystrix* by following characters: nasals long, quite wide; sagittal crest prominent; occipital strongly ridged; bullae relatively small; paraoccipital processes short; jugal not approaching lachrymal.

Chongzuo specimen is distinguished from *H. primigenia* and *H. refossa* by the less size of the skull and from *H. indica*, *H. javanica*, *H. lagrelii* and the subgenus *Thecurus* by the larger size of the skull and the larger length of the nasals. It differs from *H. africae australis* by the higher skull and the shape of the nasals which extend quite parallelly from anterior to posterior while the nasals of *H. africae australis* are enormously broadened and much wider behind than in front. It also differs from *H. cristata* by the higher skull and shorter nasal. It is distinguished from *H. brachyura* not only by the larger size, but also by following characters — the more uplifting nasals and skull; the more narrow nasal process of the premaxilla with a wedge-shaped end; the more obvious dune-like process below the joint point of the frontal, the parietal and the squamosal; the less prominent occipital; the more developed and longer paraoccipital crests which are paralleled to the occipital crest; the less developed paraoccipital process; the more developed wart-like processes on both sides of the rear central crest of basioccipital and the less developed process on the bullae at where opposing to the post end of the inner alisphenoid process.

As the length and the width of the alveolus of left P4 are very similar to the measurements of left P4 of *H. magna* which was re-erected only by left P4 and p4 (Zheng, 1993), Chongzuo specimen is referred to *H. magna* temporally. In that case, *H. magna* differs from *H. gigantea* by the lower crown of the cheek tooth, from *H. vinogradovi* by the longer alveolus of P4-M3 and from *Hystrix* sp. (Qiu, 1985) by the larger size of the tooth and the higher tooth crown.

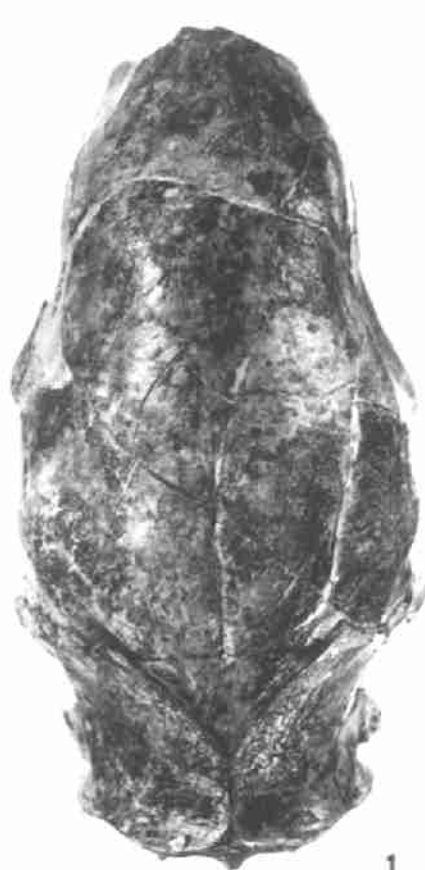
However, the re-erected of Chongzuo specimen into *H. magna* still needs further evidence by the finding of more completed material.

Acknowledgements The specimen was assigned to me by Prof. Li Chuankui in 1991. Six skulls of recent *H. brachyura* used to compare were provided by Prof. Wang Yingxiang, Pan Wenshi and Mrs. Lu Zhi. The present author is grateful to the above mentioned colleagues as well as to Mr. Zhang Jie for taking photographs.

图版 I 说明 (Explanations of plate I)

H. magna 头骨 Skull of *H. magna*, × 2/3

1. 背视 Dorsal view; 2. 腹视 Ventral view; 3. 侧视 Lateral view



1



2



3