Anat. Labor. of Prof. H. SETO, Tohoku University, Sendai.

On the Course of Intrapontine Facial Nerve of Mammalia. III.

哺乳類橋内顔面神経の走行について. III.

Yoshiya MATSUO, Gen ABE, Rikichi ABE, Morio KATO
and Michio SAITO.

松尾由也, 阿部 源, 阿部利吉, 加藤盛雄 と 齊藤達夫.

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In our foregoing Reports I and II, we have studied the course of the intrapontine facial nerve in mammals of some orders (Pitheci, Prosimii, Cetacea, Chiroptera, Insectivora, Edentata, Marsupialia, Monotremata, Carnivora and Rodentia) and reported that the courses of the fibres composing the nerve are not so typical and schematic as generally accepted hitherto, but in some cases run rather devious ways, and that the position of the genu is considerably variable according to the species of the animals. It was pointed out that position of the genu is always on the dorsal side of the abducens nucleus, but transversally, it may come just above the nucleus (Type I) or shift more to the lateral (Type II) or more to the medial (Type III) side. For following up such observations, we have extended our field of study to Ungulata.

As material, we used the PAL-carmin stained transverse serial sections of the brains of 13 animals belonging to the order of Ungulata (horse, pig, Asiatic wild ass, domestic sheep, goat, river horse, giraffe, chevrotain, Japanese deer, Indian ox, babirusa, grunting ox and two humped camel), in store at this laboratory.

Findings and Discussion.

The intrapontine facial nerve, in the specimens of Ungulata we have studied, also runs in three parts of the first part, the genu and the second part, the courses taken by the fibres of the first and the second parts showing some difference by animals. The genu begins to be formed on a level more caudal to the abducens nucleus and to change over into the second part near the cranial end of the nucleus on a level where the latter is still in view, continuing up to a level beyond the rostral end of the nucleus. By the position of the genu relative to the abducens nucleus on transverse sections, we could here also distinguish two of the three types mentioned above, as follows ;

Type I. In this type, the genu was situated just dorsal to the cent-

Fig. 1. Bird's-eye view of the course of the intrapontine facial nerve. *F* facial nucleus; *f* first part; *g* genu; *s* second part; *A* abducens nucleus (— fibres running over the dorsal side of the nucleus; ---- ditto through the nucleus; ..... ditto along ventral side of the nucleus).

Table 1.

Type I	Pig
Type II	—
Type III	a Asiatic wild ass
	Domestic sheep
	Goat
	River horse
	Giraffe
	Chevrotain
	Japanese deer
	Indian ox
	b Horse
	Babirusa
	Grunting ox
	Two-humped camel

ral one-third of the abducens nucleus (pig). When the series of sections is examined from caudal to cranial, the fibres of the first part, after the appearance of the abducens nucleus, run along the lateral side of the nucleus to its dorsal side, to join the genu (Fig. 1).

Type II. None of the Ungulata we studied belonged to this type where the genu is placed more laterally to the abducens nucleus than in the preceding.

Type III. In the animals belonging to this type, the genu was situated either a) dorsal to the medial one-third of the abducens nucleus or b) quite outside of and medial to the area dorsal to any part of the nucleus.

a) Asiatic wild ass, domestic sheep, goat, river horse, giraffe, chevrotain, Japanese deer and Indian ox belong to this type. In these animals, the fibres of the second part, in the vicinity of the cranial end of the abducens nucleus and while the nucleus is still in view, run lateralwards from the dorsal side of it, but the courses of the fibres of the first part before they reach the genu are somewhat varied with different animals, as follows ;

1. In Asiatic wild ass, domestic sheep, goat, river horse, giraffe and chevrotain, the fibres, after the appearance of the abducens nucleus, run always from the lateral to the dorsal side of the nucleus, to join the genu there (Fig. 2).

2. In Indian ox and Japanese

deer, the fibres of the second part take the same courses as in the preceding in most cases, but a small part of them run through the abducens nucleus to reach the genu (Fig. 3).

Fig. 2.

Fig. 3.

b) In horse, babirusa, grunting ox and two-humped camel, the genu is situated further to the medial so that it cannot be said to lie directly dorsal to any part of the abducens nucleus. Here also, the fibres of the first and the second part of the nerve take slightly different courses according to the kind of animals, as follows :

1. In horse, the fibres of the first part run from the lateral to the dorsal side of the abducens nucleus before reaching the genu, while those of the second part run from the dorsal to the lateral side over the nucleus, on all levels where the latter is in view (Fig. 4).

Fig. 4.

Fig. 5.

2. In grunting ox, most of the fibres of the first part take courses similar to those in the preceding, but a small part of them run through the abducens nucleus, while the fibres of the second part take the same courses as given in the preceding (Fig. 5).

Fig. 6.

cens nucleus or fell under the Type III, occupying the position typical for the genu, with the sole exception of pig in which the genu was found in a position just above the nucleus (Type I). It is of interest that, whereas in the animals treated in our Reports I and II, the position of the genu betrayed a considerably wide variation in species even belonging to the same zoological order, the position in the examined specimens of Ungulata showed almost no shifting from the typically medial location.

The courses of the fibres of the first and the second parts, however, showed rather diverse courses, which are of course much simpler than those in man previously reported by YAMAMOTO, but some of them show rather diverse courses. Yet, the facial nucleus is found to occupy much the same position in the brain stem of all these animals. This fact is, as pointed out in our Reports I and II, hard to explain if we admit that all the fibres are subject to uniform traction due to neurobiotaxis.

Summary.

1. We have studied the courses of the intrapontine facial nerve in 13 species of Ungulata.

2. In almost all cases, the genu was placed more or less to the medial of the abducens nucleus (Type III), in one case only the position of the genu being just above the nucleus (Type I).

3. In no specimen of the examined Ungulata was the genu situated more lateral to the abducens nucleus.

4. The courses of the fibres of the first and the second parts showed, beside the typical forms, diverse variations in a considerable number of cases, but with all such variations, the courses were found

3. In some specimens, such as the two-humped camel and the babirusa, however, all the fibres of the first part, once the abducens nucleus appears on the section, are seen to run through the nucleus to join the genu, while there were some fibres of the second part that also run penetrating through the nucleus, beside those running the same courses as in the preceding (Fig. 6).

As given above, in almost all the specimens of Ungulata coming under our observation, the genu was found to be placed more or less medial to the abdu-

to be much simpler than in man.

内 容 自 抄

表題の研究 I と II に於いては猿類、擬猿類、鯨類、翼手類、食虫類、貧齒類、有袋類、食肉類、齧齒類、及び単孔類に属する哺乳動物に就いてその橋内顔面神経の走行を研究したが、我々は一連の研究として、有蹄類所属の13種動物（馬、豚、アジア驢馬、羊、山羊、河馬、キリン、チェブローテン、鹿、水牛、バビルサ、ヤク及び両峰ラクダ）に就いて同様研究をなした。

有蹄類に於いても橋内顔面神経は第1部、膝、第2部を作って走行することは同様であるが、第1部及び第2部線維の走行は研究 I 及び II に於ける哺乳動物同様、決して単純で定型的ではなく、動物によって多少の相異を示している。即ち第1部線維は全材料動物に於いて、外転神経核の下方で現れ始め、外転神経核出現後は該核背側を通して膝に入るのが一般的であるが、水牛、鹿及びヤクでは、該核を貫通する線維も多数ある。両峰ラクダ及びバビルサの第1部線維はすべて該核を貫通してゐるのが特有である。

第2部線維は外転神経核上端に於いては該核の背側を外方に走るのが一般的であるが、両峰ラクダとバビルサでは該核を貫通する線維も含んでゐるのが例外的である。

膝は表記の研究 I と II に於ける他の哺乳類と異り、有蹄類では殆んど全部が外転神経核の背方でその内側寄りに走っていて、我々の所謂第 III 型に属し、たゞ1例豚に於いてのみ該核上でその真上を走っている（第 I 型）、即ち我々が研究した13種の有蹄類動物では外転神経核の外側寄りに走るもの（第 II 型）は存在せず、その大部分が人と同じく第 III 型を示している。

References.

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