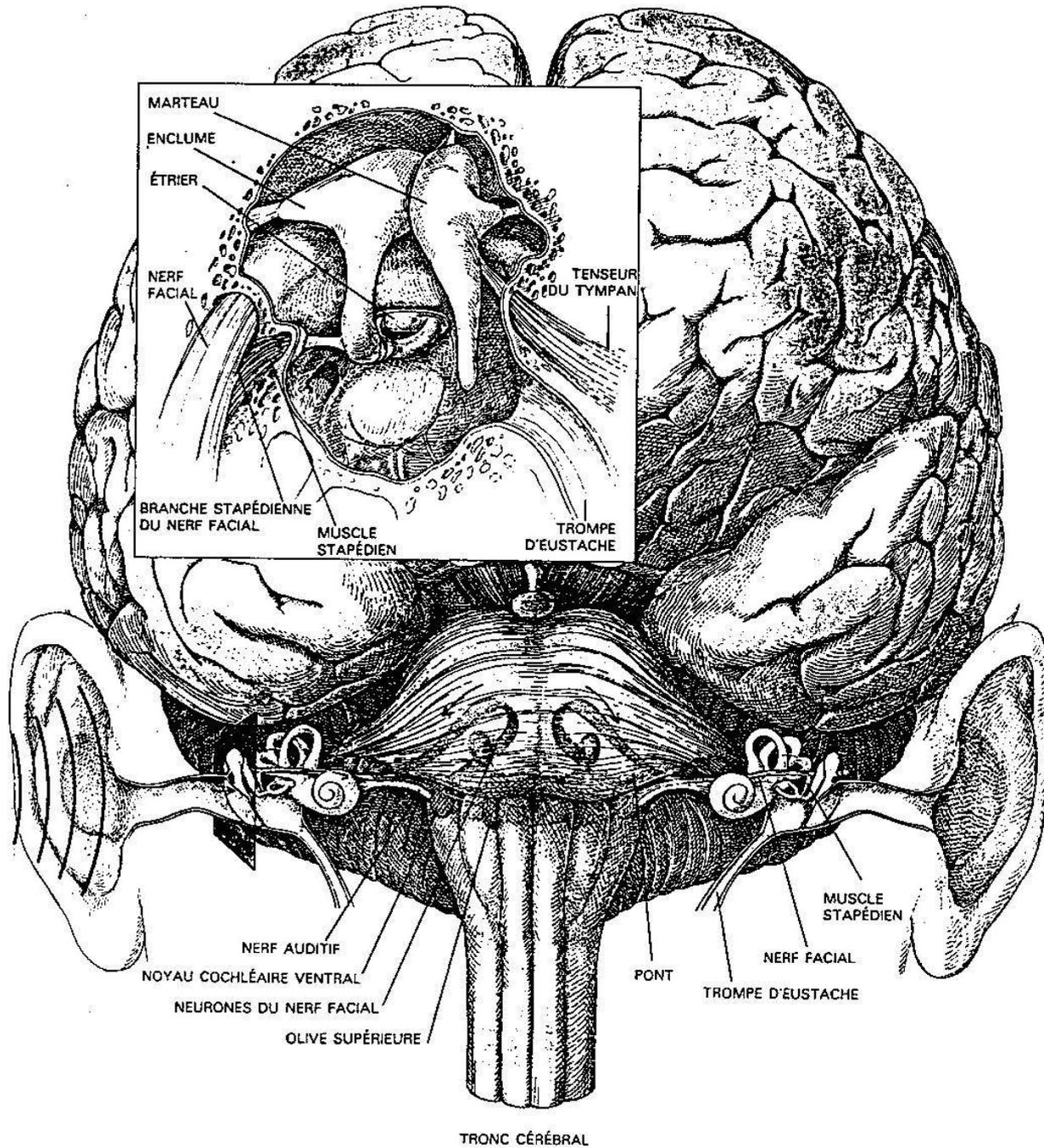
The background of the slide is an aerial photograph of a city, likely Paris, showing a dense urban landscape with various buildings and a prominent tall, dark skyscraper in the center. The sky is a clear, light blue.

Potentiels Evoqués Auditifs  
précoces (PEAp)  
ou  
PEA du tronc cérébral (PEAtc)



MARTEAU  
 ENCLUME  
 ÉTRIER  
 NERF FACIAL  
 BRANCHE STAPÉDIENNE  
 DU NERF FACIAL  
 MUSCLE  
 STAPÉDIEN  
 TROMPE  
 D'EUSTACHE  
 TENSEUR  
 DU TYMPAN

NERF AUDITIF  
 NOYAU COCHLÉAIRE VENTRAL  
 NEURONES DU NERF FACIAL  
 OLIVE SUPÉRIEURE

PONT  
 NERF FACIAL  
 TROMPE D'EUSTACHE  
 MUSCLE  
 STAPÉDIEN

TRONC CÉRÉBRAL

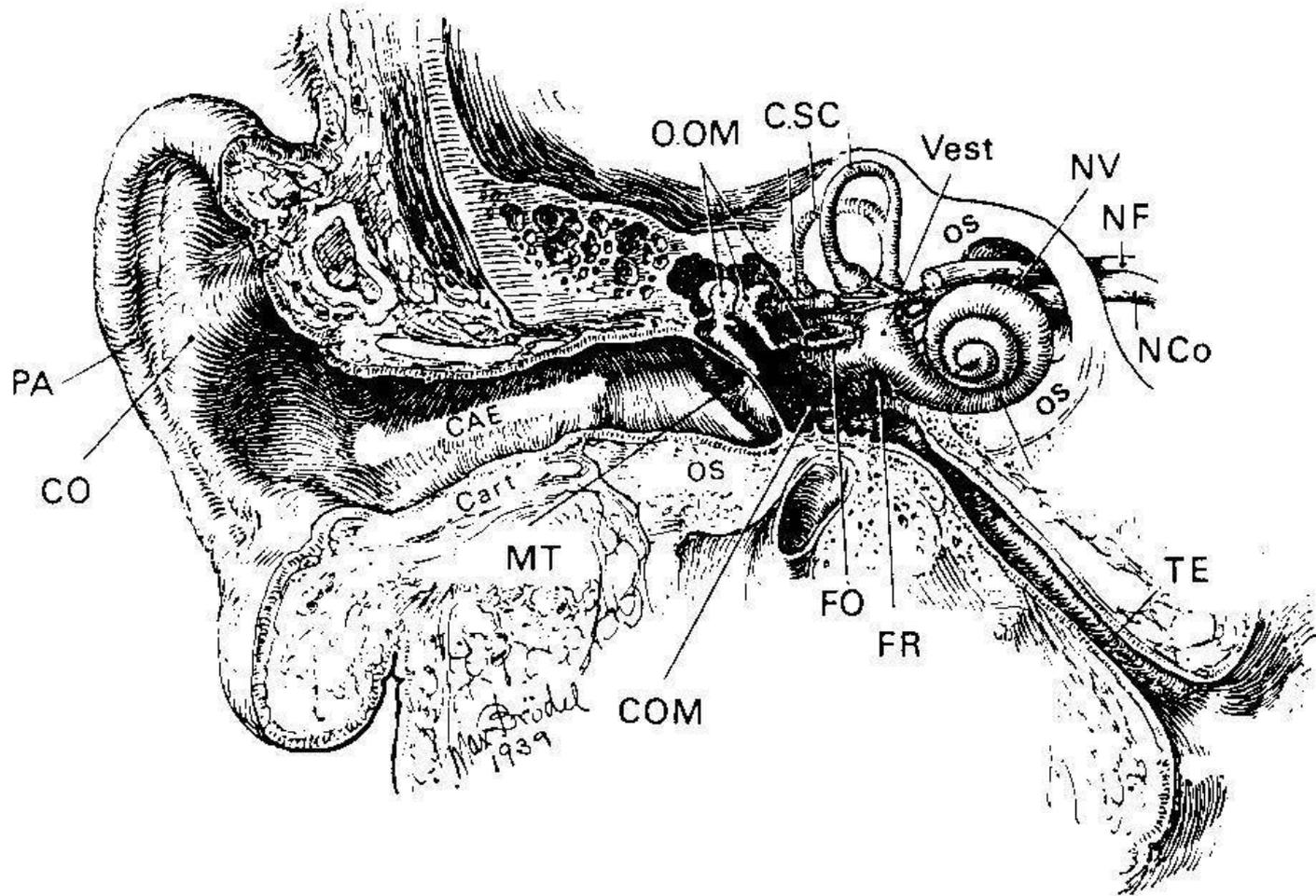
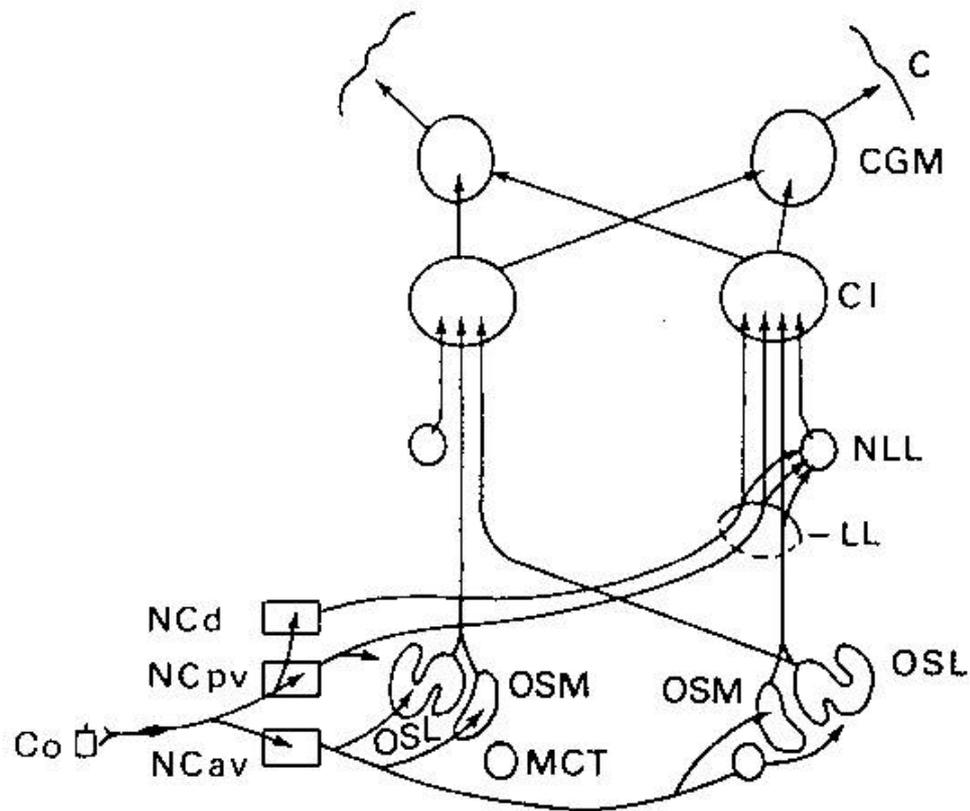


Figure 2.1

Coupe longitudinale de l'appareil auditif humain.

PA : pavillon ; Co : conque ; CAE : conduit auditif externe ; Cart : cartilage ; MT : membrane tympanique ; O.M. : osselets de l'oreille moyenne ; CSC : canaux semi-circulaires ; FO : fenêtre ovale ; FR : fenêtre ronde ; COM : cavité de l'oreille moyenne ; Vest : vestibule ; NV : nerf vestibulaire ; NF : nerf facial ; NCo : nerf cochléaire ; TE : trompe d'Eustache

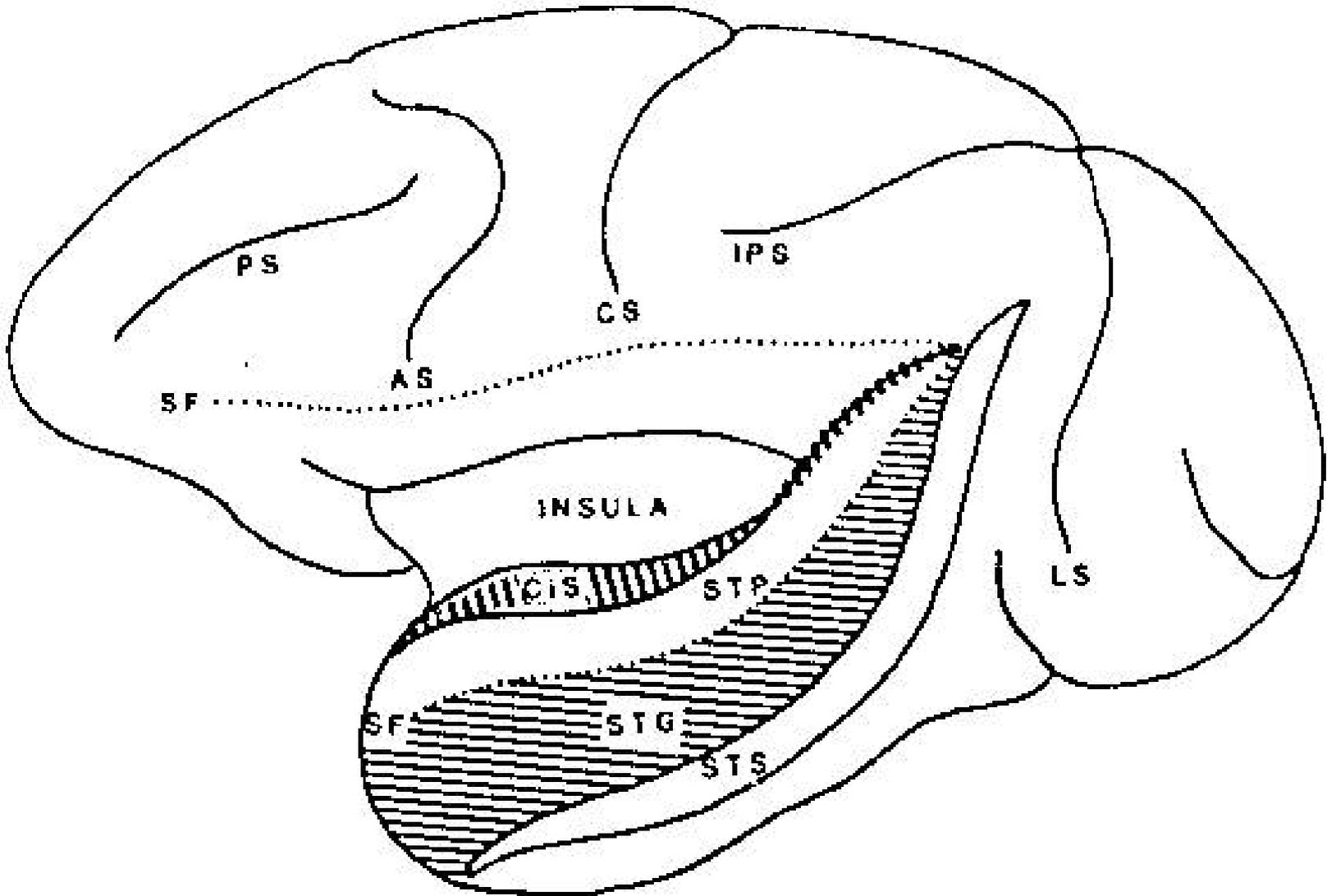


**Figure 3.1**

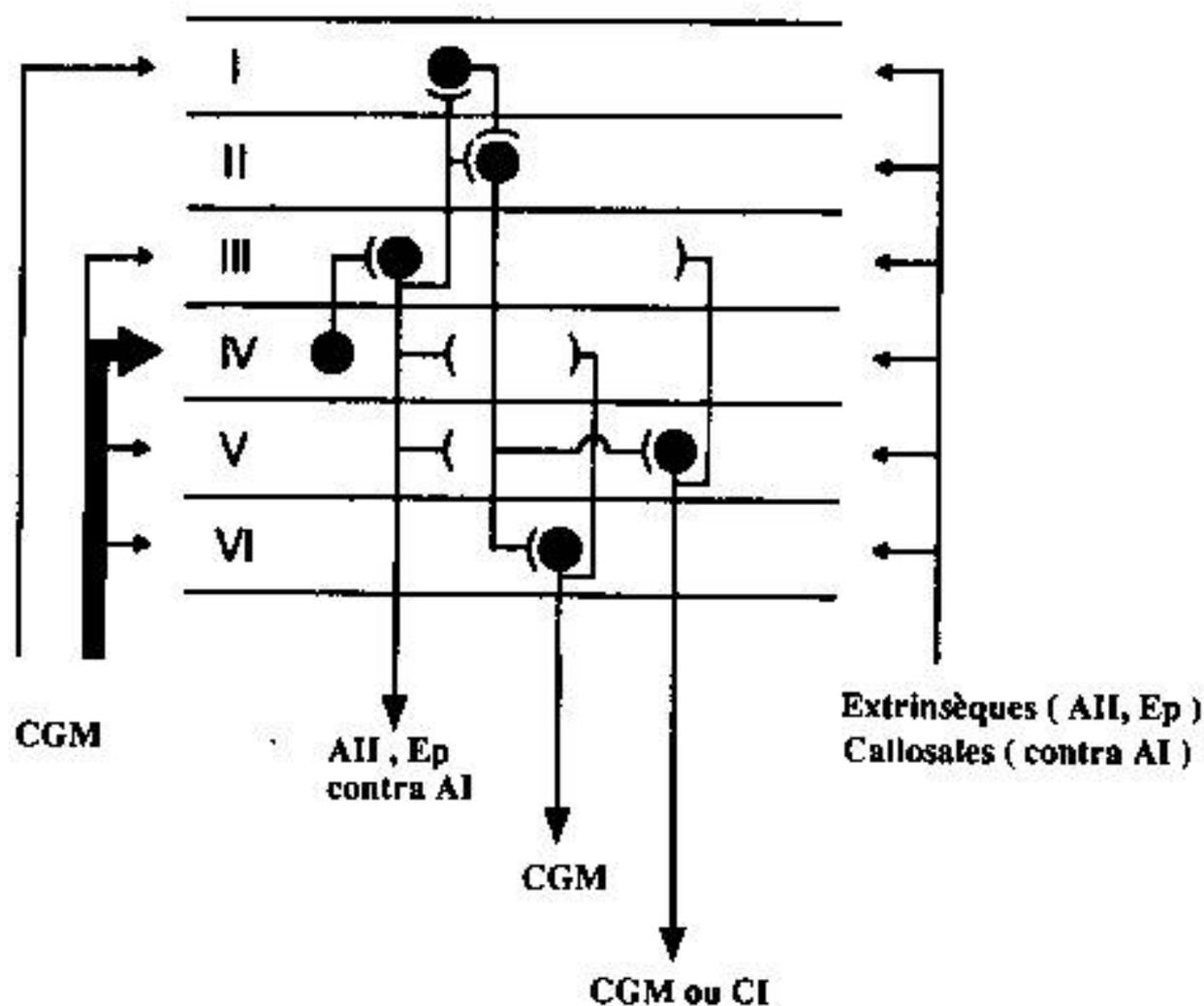
**Schéma des voies auditives montantes dans le tronc cérébral.**

Co, cochlée ; NCav, noyau cochléaire antéro-ventral ; NCpv, postéro-ventral ; NCd, dorsal ; OSM, olive supérieure, noyau médian ; OSL, olive supérieure latérale ; MCT, noyau médian du corps trapézoïde ; LL, lemniscus lateralis ; NLL, noyaux du LL ; CI, colliculus inférieur ; CGM, corps genouillé médian ; C, cortex acoustique. Ce schéma ne représente qu'une mise en place générale ; d'autres détails sont à trouver dans des figures suivantes : pour les voies bulbaires : fig. 3.3 ; pour le colliculus inférieur : fig. 3.15 ; pour le corps genouillé médian : fig. 3.24 ; pour le cortex fig. 3.32 sq. Les flèches n'impliquent pas nécessairement des liaisons directes.

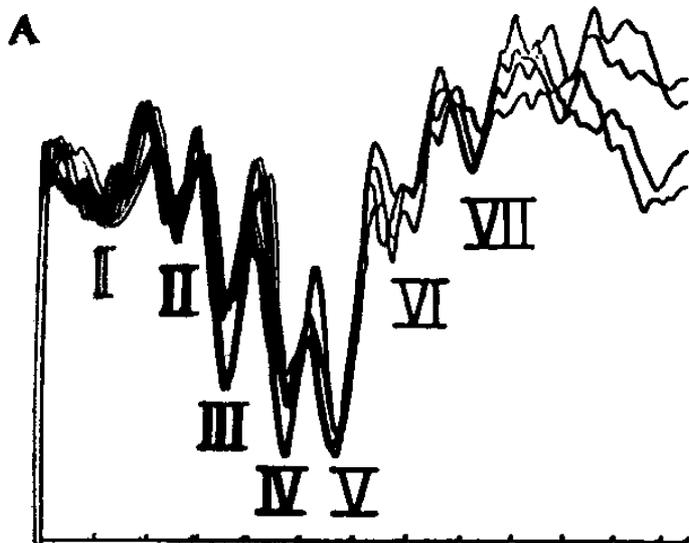
# REGION TEMPORALE SUPERIEURE



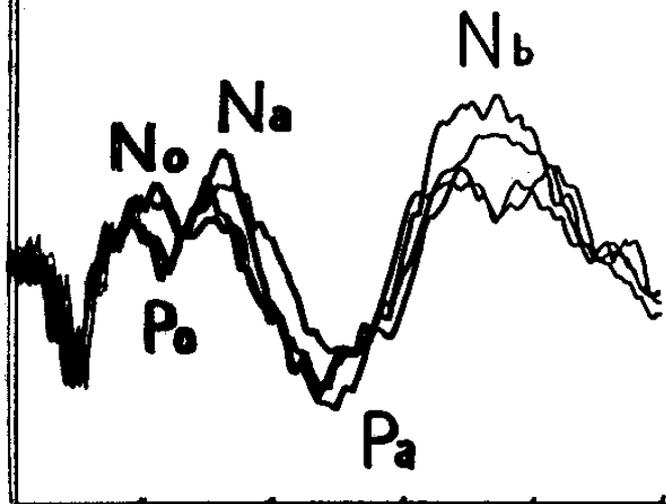
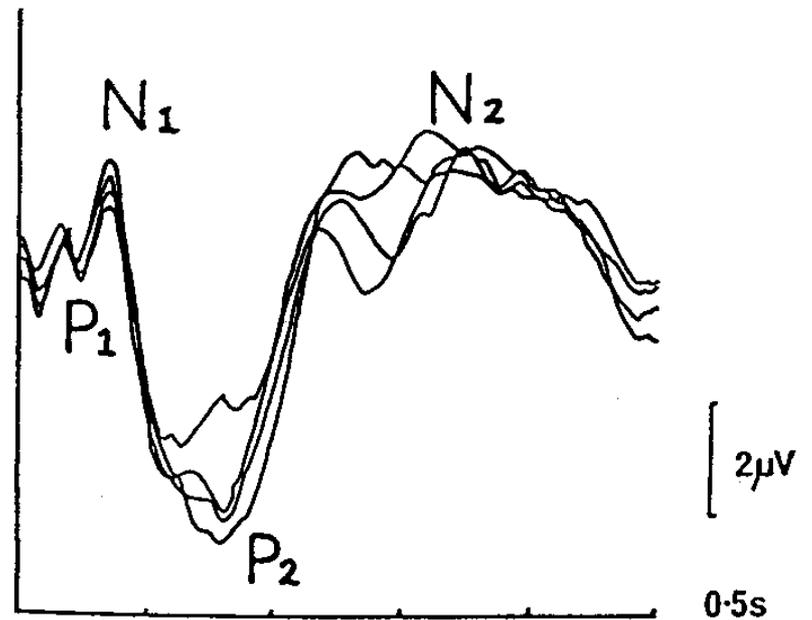
## Cortex auditif primaire



**Fig. 5-25 Schéma fonctionnel du cortex auditif**, établi par la technique de l'enregistrement et du marquage intracellulaires. (D'après Mitani et coll., 1985)



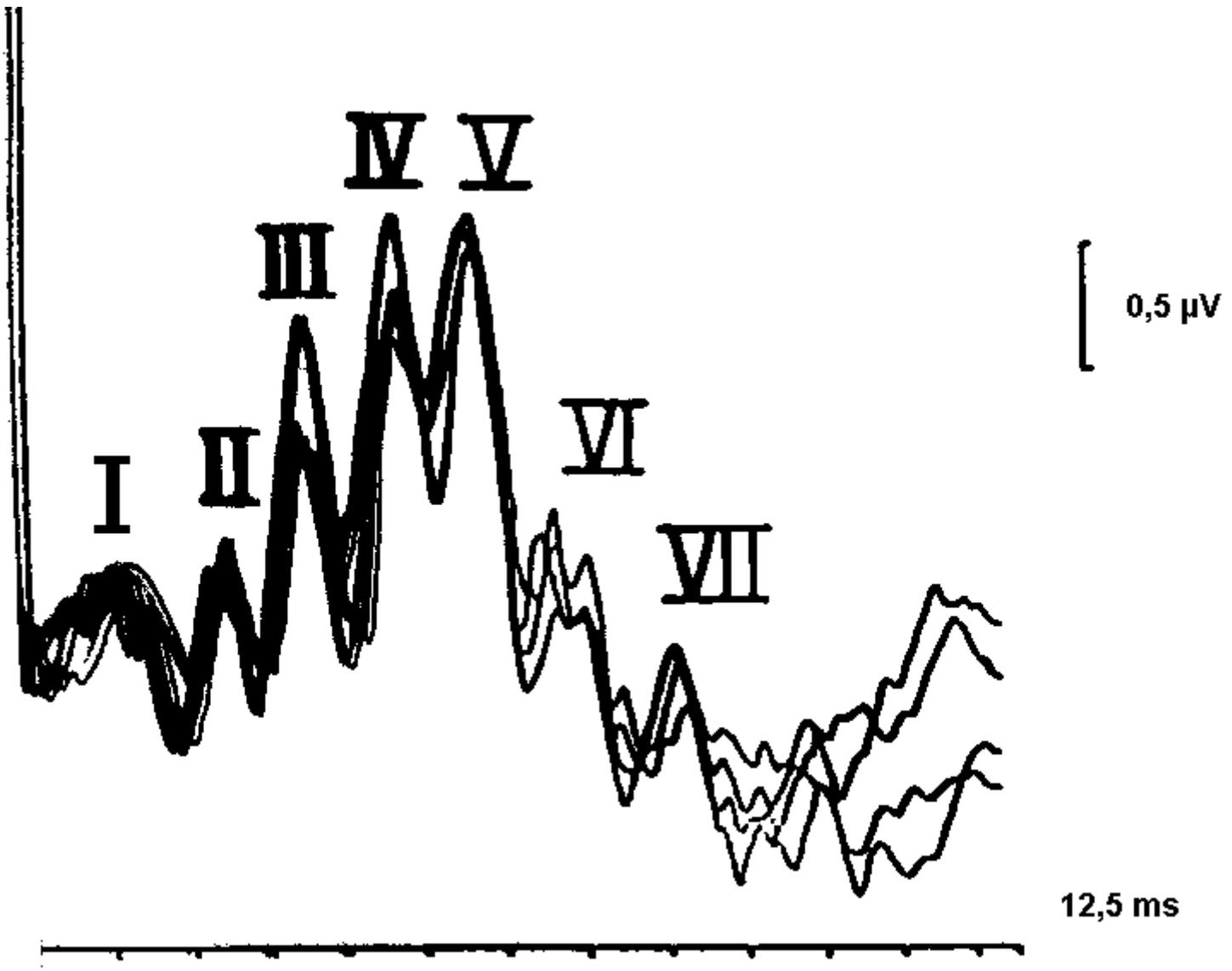
12.5ms



## HUMAN AUDITORY EVOKED POTENTIALS I: EVALUATION OF COMPONENTS

T. W. PICTON, S. A. HILLYARD, H. I. KRAUSZ  
AND R. GALAMBOS

Electroencephalography and Clinical Neurophysiology,  
1974, 36: 179-190



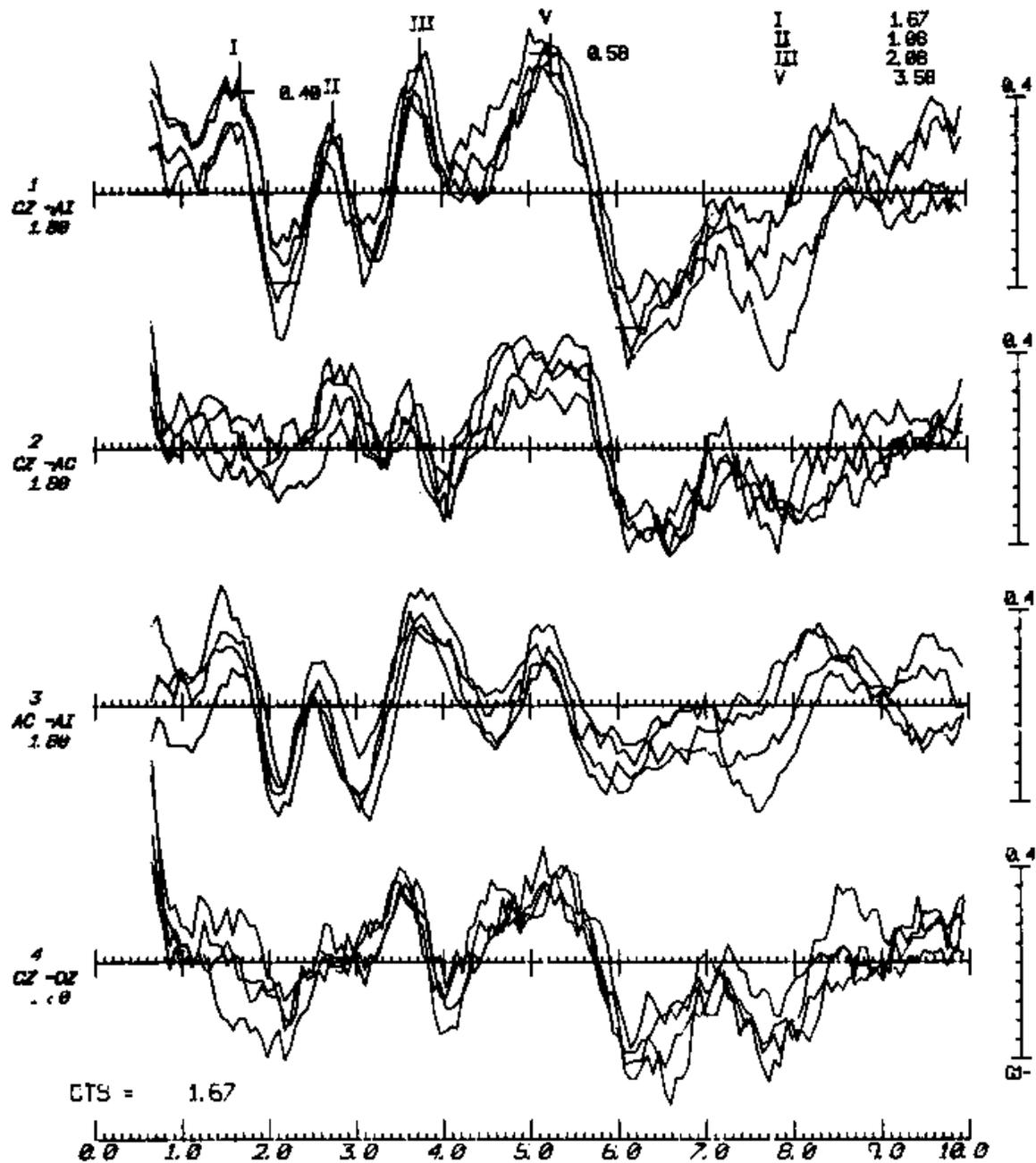


FIG. 4-3. BAEPs recorded from a normal subject using most commonly employed derivations.

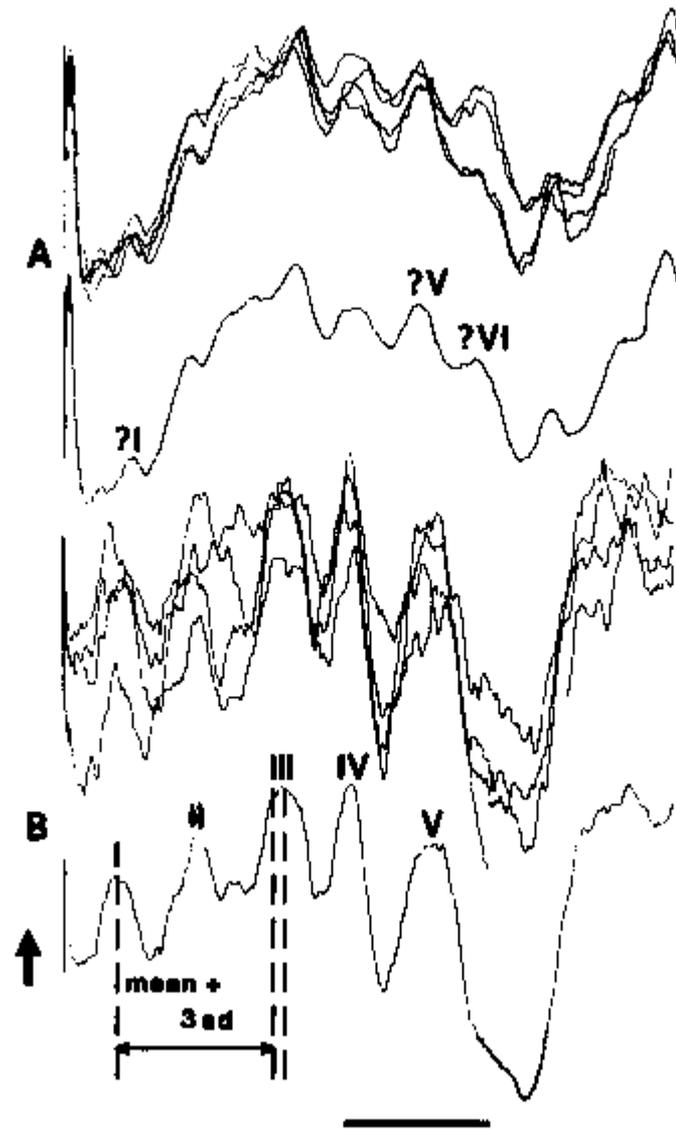
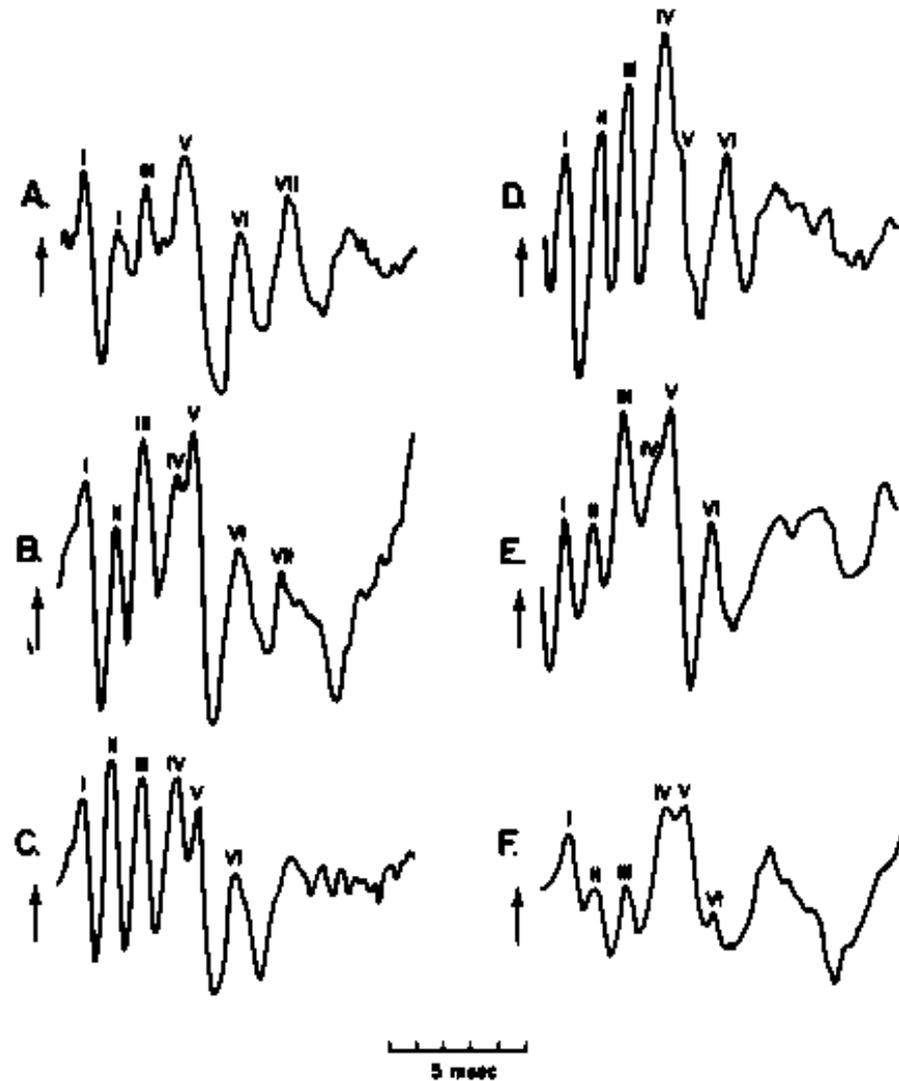
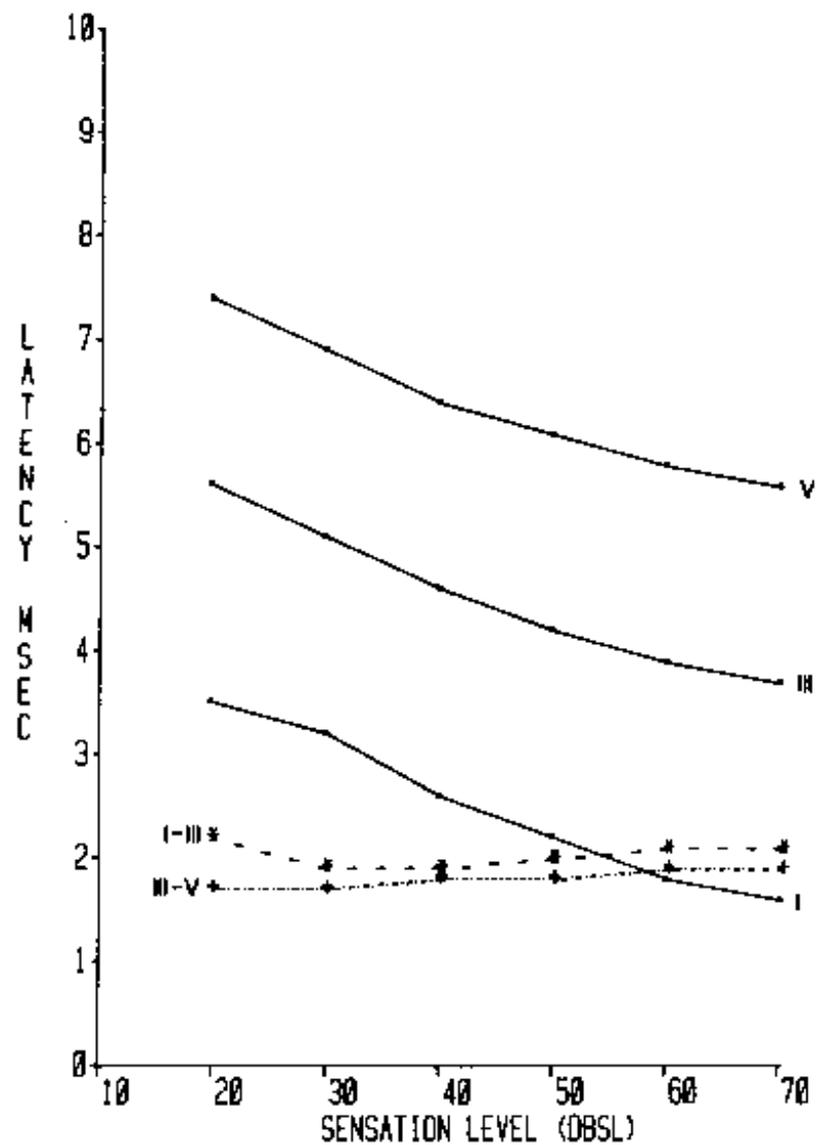


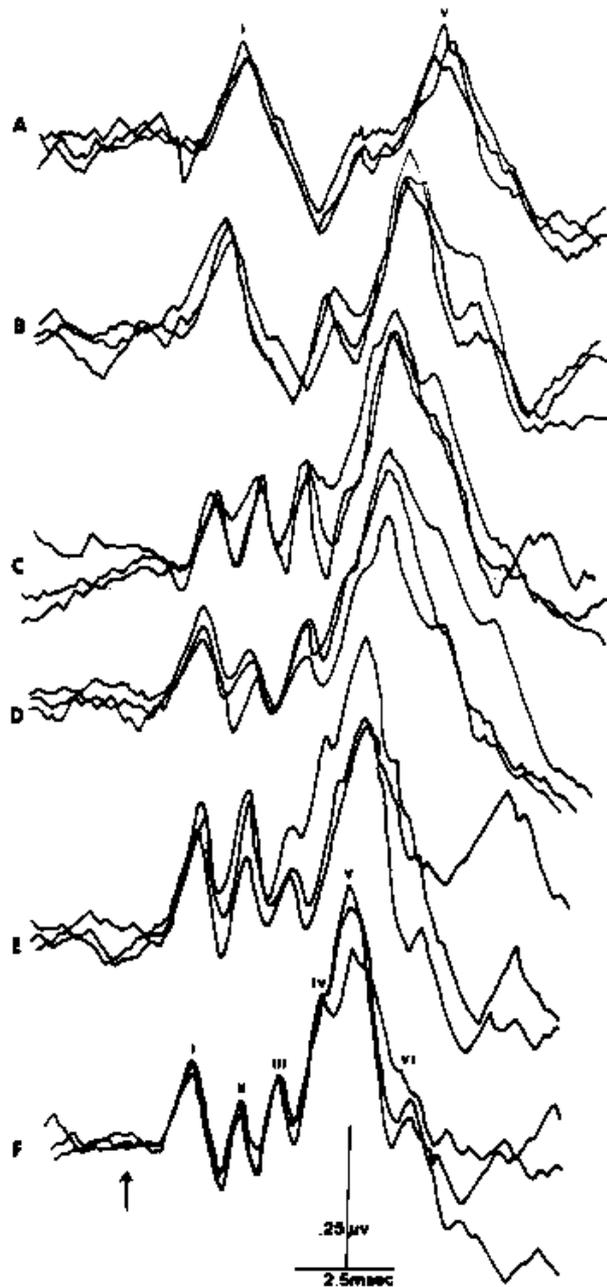
FIG. 4-4. Utility of decreasing click intensity. BAEPs recorded from the left ear of a patient



**FIG. 4-8.** Different shapes of the waves IV-V complex seen in normal subjects. All are normal variations; the order of most to least frequent occurrence is B, C, A, E, D, and F. Each trace is the sum of 2,048 to 4,096 responses from a single ear of a normal subject. (Reprinted, with the publisher's permission, from Chiappa et al, 1979.)



**FIG. 4-9.** Effect of stimulus intensity on absolute and interpeak latencies. Note that the absolute latency plots are parallel so that, as would be expected, the interpeak latency plots are flat with very little change until low intensities are reached. Pooled results from 7 normal subjects.



**FIG. 4-13.** Maturation changes in BAEP waveforms as a function of age: **A:** newborns; **B:** 6-week olds; **C:** 3-month olds; **D:** 6-month olds; **E:** 1-year olds; **F:** adults. Each trace represents an average of 2,400 stimulations obtained from a different subject. Note also the decreases in absolute latency with increasing age. Derivation was vertex to ipsilateral ear. Relative positivity at the CZ electrode produces an upward trace deflection. (Reprinted, with permission, from Salamy and McKean, 1976.)

TABLE 4-2. BAEP normal values at 10/sec

Absolute latencies (msec)				Interwave latencies				Interear interwave differences		
Wave	Mean	SD	Mean + 3 SD	Waves	Mean	SD	Mean + 3 SD	Mean	SD	Mean + 3 SD
I	1.7	0.15	2.2	I-III	2.1	0.15	2.6	0.10	0.09	0.37(0.4)
II	2.8	0.17	3.3	I-V	4.0	0.23	4.7	0.13	0.10	0.43(0.5)
III	3.9	0.19	4.5	III-IV	1.2	0.16	1.7	0.12	0.14	0.54(0.6)
IV	5.1	0.24	5.8	III-V	1.9	0.18	2.4	0.10	0.11	0.43
V	5.7	0.25	6.5	IV-V	0.7	0.19	1.3	0.15	0.14	0.57(0.8)
VI	7.3	0.29	8.2	V-VI	1.5	0.25	2.3	0.22	0.19	0.79(0.8)

Absolute amplitudes ( $\mu$ V)				Mean amplitudes as %			
Wave	Mean	SD	Range	Waves	Mean	SD	Mean + 3 SD
I	0.28	0.14	0.06-0.85	III/V	50	23	119
III	0.23	0.12	0.03-0.55	I/IV (pre)	132	75	357
IV (pre)	0.25	0.12	0.04-0.63	I/IV (post V)	75	39	191
IV (post V)	0.40	0.13	0.08-0.88	I/V	73	48	218
IV/V (highest peak)	0.47	0.16	0.14-0.88	I/IV-V	62	30	152
V	0.43	0.16	0.15-0.86				

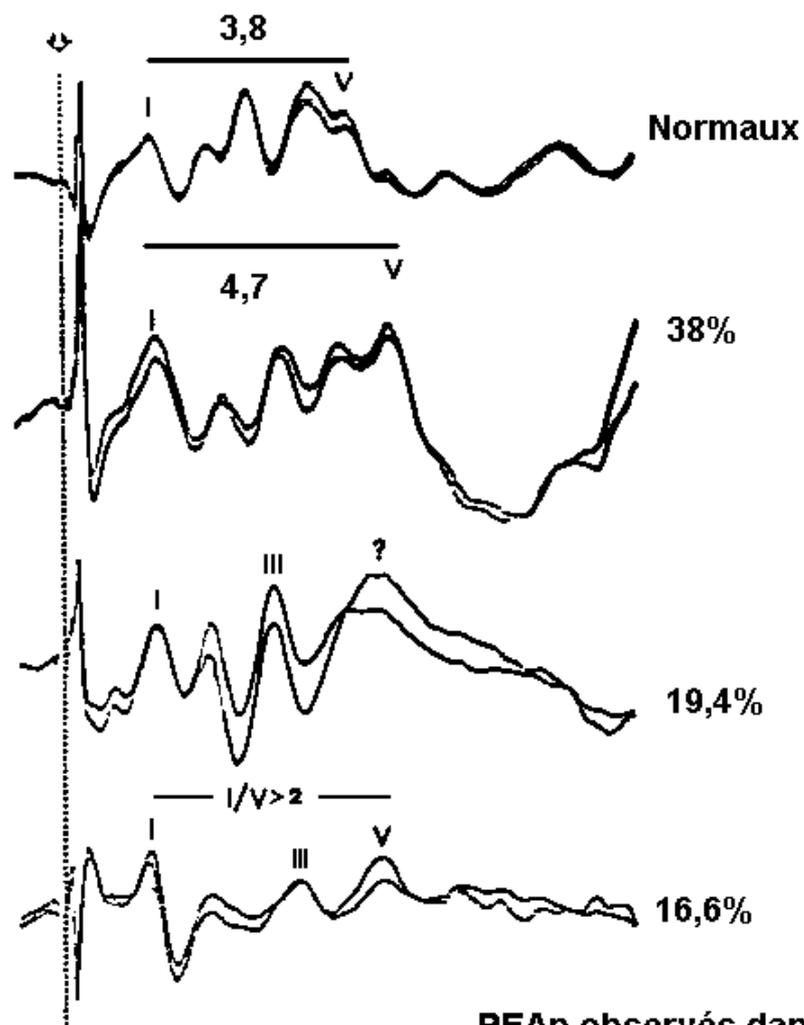
  

Amplitude difference between ears			
V	Mean	SD	Mean + 3 SD
V	20	17	71

Normal values for BAEPs obtained from 50 normal subjects (15-51 years old, mixed gender) at 10 clicks/sec.

# Corrélations Cliniques





PEAp observés dans la Sclérose En Plaque

**TABLE 5-3. Incidence of abnormal BAEPs in MS**

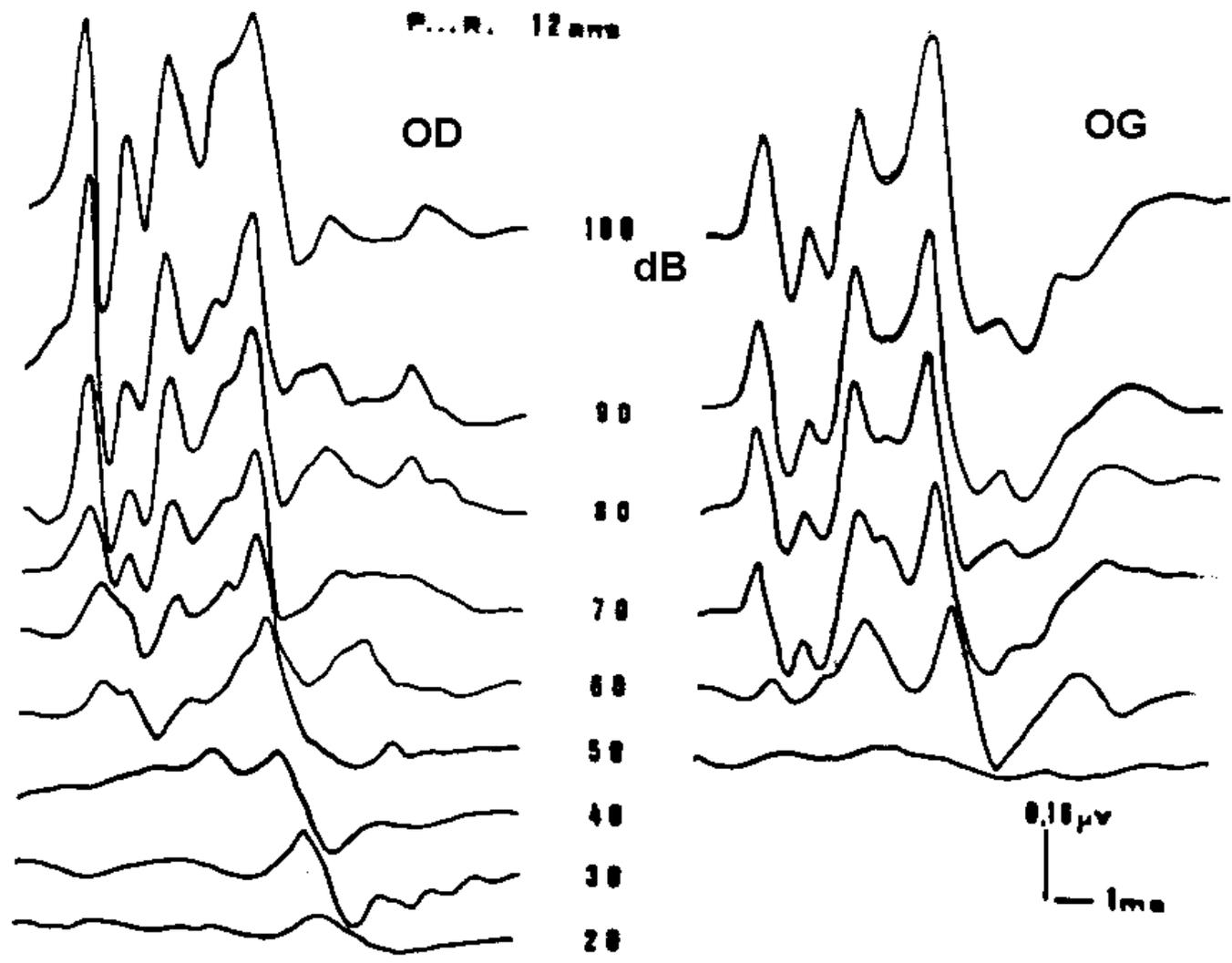
	No. (%) of patients			
	Definite	Probable	Possible	Total
With symptoms and/or signs of brainstem lesion	34/60 (57)	8/38 (21)	7/33 (21)	49/131 (37)
Without symptoms and/or signs of brainstem lesion	4/21 (19)	6/29 (21)	5/21 (24)	15/71 (21)
All patients	38/81 (47)	14/67 (21)	12/54 (22)	64/202 (32)

Some nonspecific data (e.g., nystagmus) were taken as indications of "clinically suspected" brainstem lesions. See Section 3.4 for further explanations of this patient group and data. (From Chiappa et al, 1980, with permission.)

**TABLE 5-4. Incidence of types of BAEP abnormalities in MS**

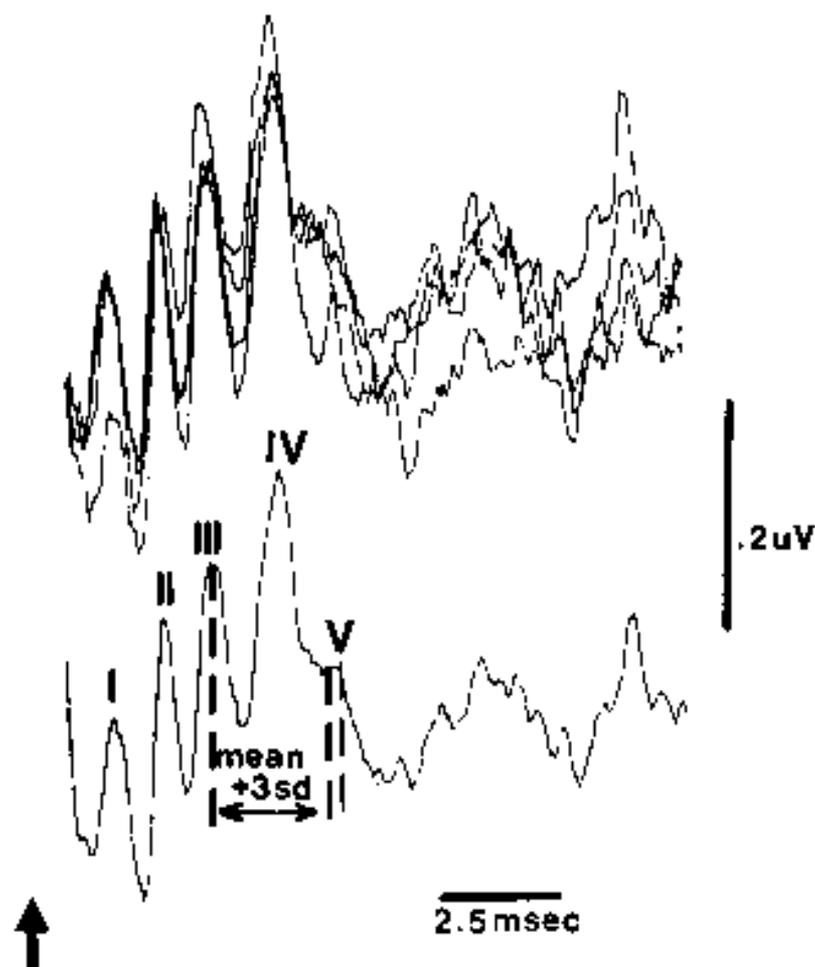
Abnormality	No. (%) of patients			
	Definite	Probable	Possible	Total
Interwave latency	5 (13)	2 (14)	1 (8)	8 (13)
Wave V amp.	20 (53)	8 (57)	7 (58)	35 (55)
Both	13 (34)	4 (29)	4 (33)	21 (33)
Only I-III present	3 (8)	3 (21)	1 (8)	7 (11)
Only I-II present	3 (8)	0	2 (17)	5 (8)
Only I present	0	1 (7)	1 (8)	2 (3)
No responses	2 (5)	0	1 (8)	3 (5)

(From Chiappa, 1980b, with permission.)

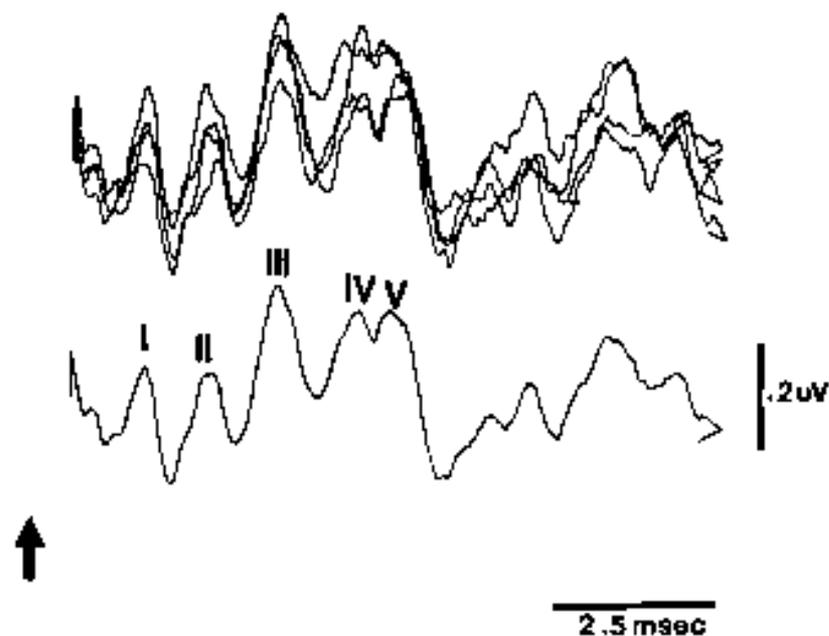


Enregistrement réalisé chez un sujet présentant une surdité de perception endocochléaire unilatérale avec recrutement

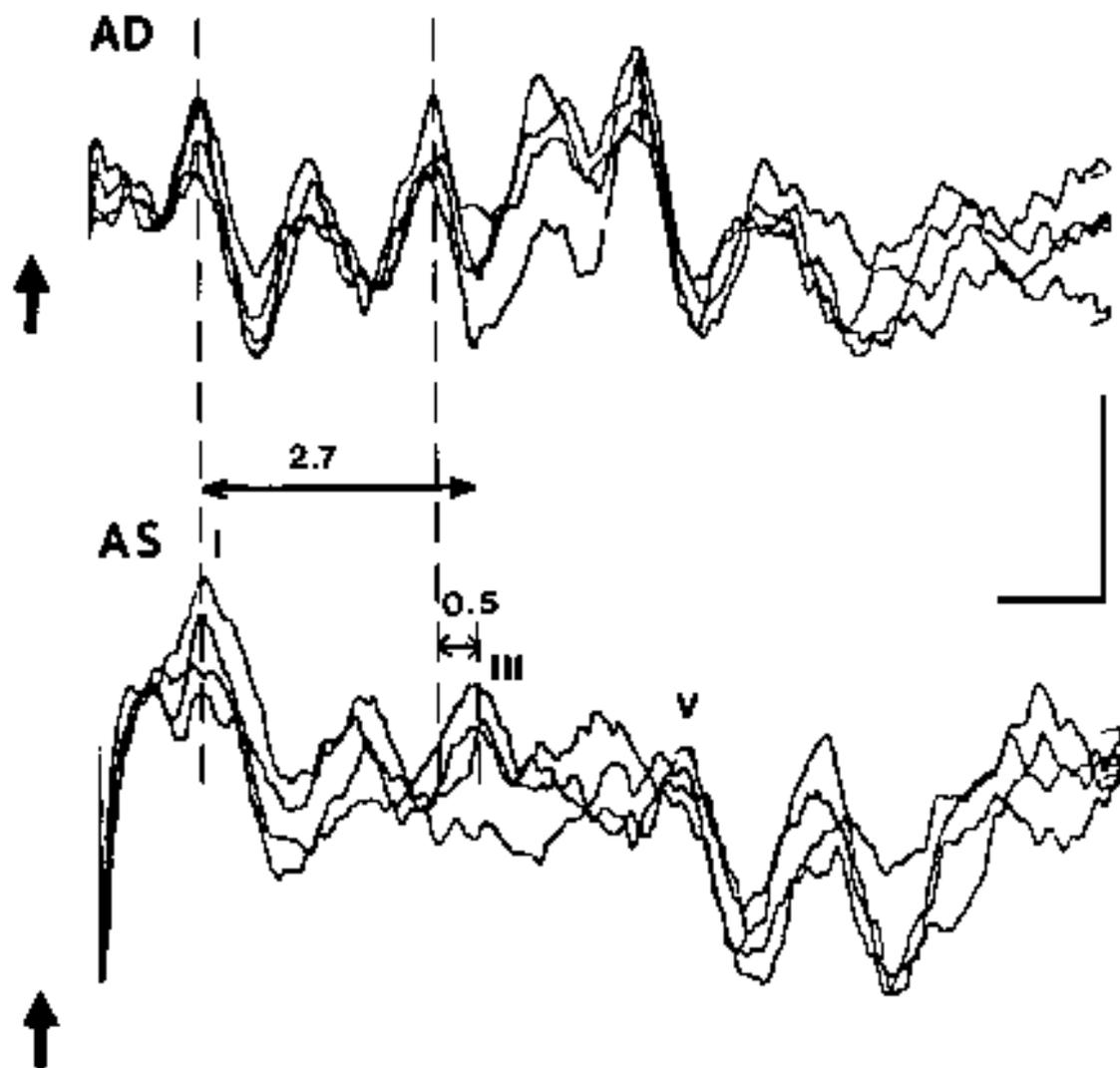
PRE-OP



POST-OP



**FIG. 5-9.** BAEPs from a patient with a large acoustic neuroma that distorted and compressed the brainstem. The tumor was on the opposite side from the ear whose BAEPs are shown here. Note the abnormal III-V separation and low wave V amplitude, both of which improve post-operatively. Each trace is the average of 1,024 clicks with the grand average beneath.

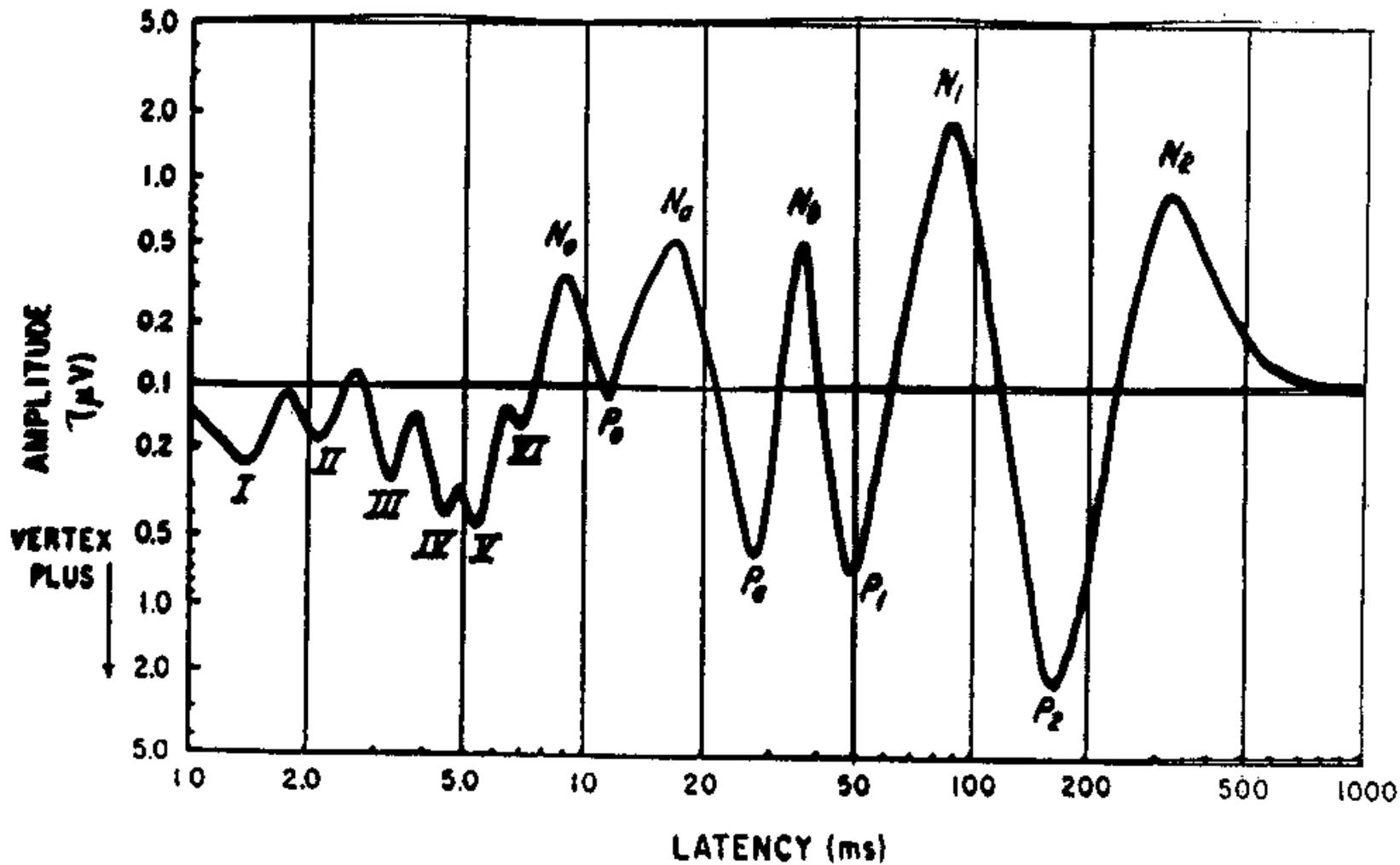


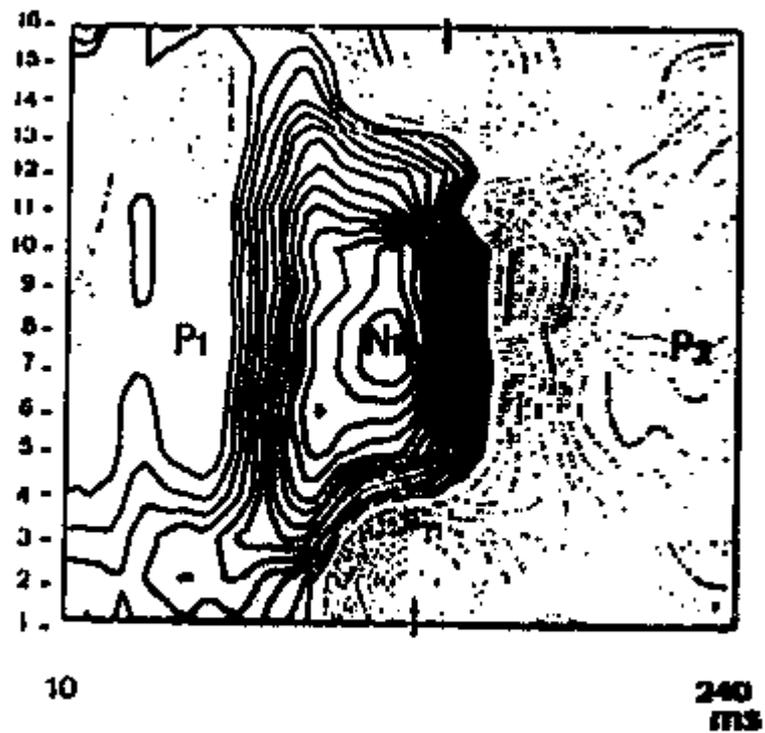
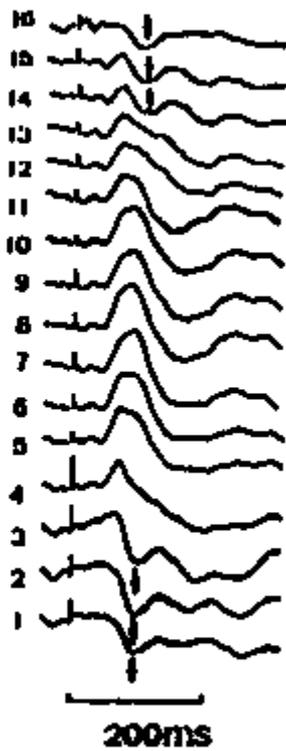
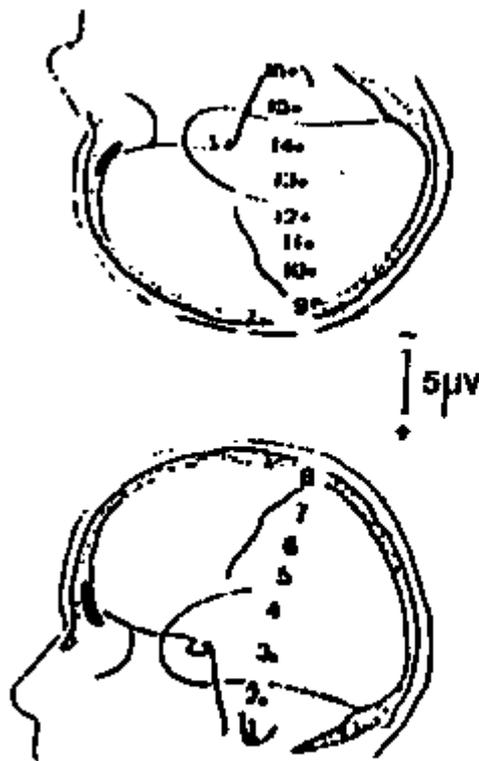
**FIG. 5-7.** BAEPs from a patient with an acoustic neuroma and normal CT scan. Note that the I-III separation is at the upper limit of normal (mean + 3 SD), but the interear difference for that measure is greater than the normal mean + 3 SD, helping to confirm the abnormality of the BAEPs. Each trace is the average of 512 clicks. Calibration marks are 0.25  $\mu$ V and 1 msec. AD, right ear; AS, left ear.

# PEAtc : démarche diagnostique neurologique

<b>A) Pic V bien identifiable et latence normale</b>	<b>B) Pic V identifiable, mais latence augmentée</b>	<b>C) Pic V non identifiable</b>
<p>- <i>Pic I identifiable</i>: si les autres paramètres sont normaux, l'examen est normal.</p>	<p>- <i>Pic I de latence augmentée</i>: pathologie périphérique, surdité de transmission (bouchon).</p>	<p>- <i>Si le pic I est identifiable</i>: examiner les autres pics. Si pics IV et V absents: gliome pontique; sténose artère basilaire; hémorragie intra pontique.</p>
<p>En cas de surdité endo cochléaire, la réponse peut cependant être normale à forte intensité. Faire alors une recherche de seuil en diminuant l'intensité de stimulation.</p>	<p>- <i>Pic I identifiable, de latence normale</i>: atteinte rétro cochléaire, nerf auditif ou protubérance; ou atteinte auditive fréquentielle (faire un audiogramme). SEP, hypothyroïdie, hypothermie, intoxication barbiturique ou alcoolique. Si asymétrie I-III, rechercher étiologie locale.</p>	<p>- <i>Pic I seul présent</i>: arachnoïdite; retard psychomoteur sévère chez l'enfant, avec élargissement des 3ème et 4ème ventricules; hernie amygdale cérébelleuse; tumeur de l'angle ponto cérébelleux; tumeur de la fosse postérieure, mort cérébrale par anoxie prolongée.</p>
	<p>- <i>Pic I non identifiable</i>: augmenter l'intensité de stimulation. Si I présent, origine endocochléaire, sinon on ne peut conclure.</p>	<p>- <i>Toutes les ondes absentes</i>: Oedème du tronc ou dommages étendus; atteinte du nerf auditif.</p>

HUMAN AUDITORY EVOKED POTENTIALS  
60 dB Click Stimulus, Vertex to Mastoid Recording

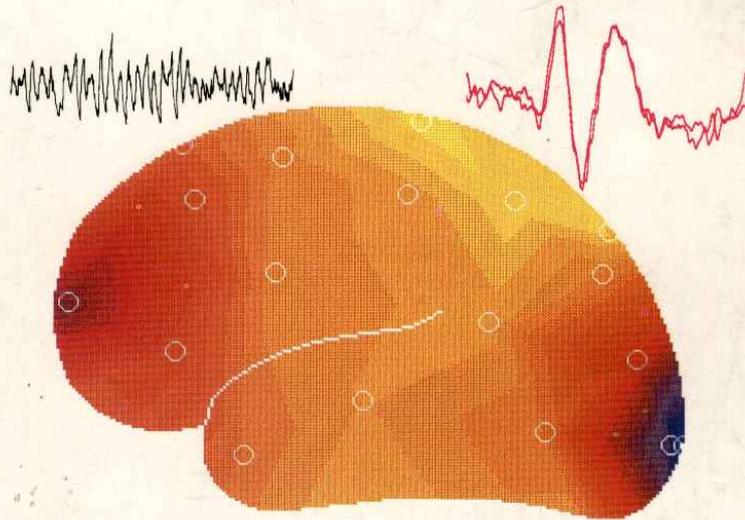




# Les potentiels évoqués

J.-M. GUÉRIT

Préface de E.-Ch. Laterre



MASSON 

