

MATERIAL AND METHODS

The material was collected from the unfixated cadavers of both sexes aged 18-91 years in whom no CNS pathological changes were observed. 144 specimens were collected, 72 male and 72 female. The material was classified according to sex and age, the groups included the successive series of tens of years up to 90 years.

The measurements of the superior and inferior colliculi were performed on the anterior surface of the brain stem. The deviation angle of the colliculus axis from the median line and the colliculus length. The colliculus axis ran with its length. The longest colliculus value was accepted as its length and the biggest dimension perpendicular to the length as its width. The colliculus height was measured from its apex to the tectal lamina level. The measurements were performed using the slide caliper (accurate within 0.05 mm) and the protractor (accurate within 0.5°). The results were compiled in tables and presented graphically.

EXAMINATIONS

The superior colliculi are obliquely placed, their upper ends deviated from the median line. The inferior colliculi are sphere-like shaped and their axes are almost horizontal. The left colliculi are mostly bigger than the right ones.

Table 1. The results of average values in the individual age groups in males.
Superior colliculi

Age groups		Axis deviation		Length		Width		Height	
Age	Number of prep.	right side	left side	right side	left side	right side	left side	right side	left side
		[°]	[°]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
18-20	5	38.80	44.20	11.67	12.10	7.00	7.60	5.08	5.30
21-30	10	48.00	48.90	11.13	11.35	7.33	7.71	5.71	5.92
31-40	10	51.30	49.90	11.18	10.69	7.33	7.55	4.90	4.93
41-50	10	49.40	51.80	11.03	11.10	7.40	7.60	4.86	4.97
51-60	10	52.90	54.50	10.28	10.17	7.18	7.53	4.77	4.94
61-70	10	53.60	55.00	10.62	10.67	7.16	7.43	5.21	5.45
71-80	10	55.00	53.80	10.42	11.01	6.73	6.92	4.82	5.07
81-90	7	55.70	53.57	11.30	11.57	7.02	7.58	5.01	5.07

Table 2. The results of average values in the individual age groups in males.
Inferior colliculi

Age groups		Axis deviation		Length		Width		Height	
Age	Number of prep.	right side	left side	right side	left side	right side	left side	right side	left side
		[°]	[°]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
18-20	5	53.00	54.60	7.72	8.52	6.16	6.48	2.96	3.20
21-30	10	61.60	61.40	7.63	7.85	5.83	5.89	3.85	3.93
31-40	10	69.80	70.20	7.41	7.75	5.54	5.75	3.69	3.83
41-50	10	64.80	65.40	7.45	7.77	5.57	6.00	3.65	3.70
51-60	10	68.30	71.30	7.35	7.39	5.60	5.60	3.60	3.86
61-70	10	67.70	68.50	7.19	7.13	5.33	5.42	3.50	3.73
71-80	10	69.20	68.80	7.18	7.56	5.33	5.58	3.36	3.42
81-90	7	66.85	65.28	7.52	7.82	5.44	5.80	3.00	3.08

Table 3. The results of average values in the individual age groups in females.
Superior colliculi

Age groups		Axis deviation		Length		Width		Height	
Age	Number of prep.	right side	left side	right side	left side	right side	left side	right side	left side
		[°]	[°]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
18-20	2	47.00	45.00	10.20	11.50	6.80	7.40	5.50	5.70
21-30	10	45.90	46.50	10.87	10.29	6.50	6.84	5.44	5.46
31-40	10	51.10	48.20	11.90	11.38	7.28	7.42	5.27	5.38
41-50	10	49.70	51.10	10.65	10.68	7.00	7.15	4.73	4.96
51-60	10	51.10	48.40	10.84	10.54	6.57	7.15	4.37	4.58
61-70	10	54.00	55.80	10.44	10.19	6.66	7.19	4.98	5.16
71-80	10	53.60	56.20	10.12	9.92	6.21	6.90	5.06	5.12
81-90	10	53.40	52.20	10.60	11.07	6.64	7.00	4.55	4.77

Table 4. The results of average values in the individual age groups in females.
Inferior colliculi

Age groups		Axis deviation		Length		Width		Height	
Age	Number of prep.	right side	left side	right side	left side	right side	left side	right side	left side
		[°]	[°]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
18-21	2	57.50	55.50	7.30	7.50	5.90	5.90	3.00	3.00
21-30	10	56.80	59.90	7.31	7.22	5.67	5.53	3.49	3.48
31-40	10	63.00	62.70	6.94	7.18	5.53	5.76	3.30	3.32
41-50	10	59.40	61.90	7.79	7.82	5.73	5.77	3.25	3.31
51-60	10	62.20	61.90	7.02	7.55	5.36	5.56	3.39	3.51
61-70	10	70.30	69.20	7.16	7.44	5.30	5.56	3.79	3.92
71-80	10	68.70	70.00	6.82	7.31	5.01	5.30	3.60	3.61
81-90	10	65.10	63.40	6.99	7.48	5.04	5.46	3.43	3.49

DISCUSSION

Testut and Lataret (13) reported the length of the superior colliculi ranging from 10.0-12.0 mm and their width 7.0-8.0 mm. Lazorthes (5) reported the superior colliculus length as 10.0 mm and the width as 8.0 mm. Bołgów et al. (2) did not describe their measurement methods and their width values are higher than the length is 7.0-10.2 mm, the width 16.2-22.5 mm. The above mentioned authors found out that the growth of the superior and inferior colliculi ended during the third year of life and that the bigger dimensions in adults resulted from the differences in the techniques of fixation and measurements. According to Sherman, Citrin, Barkovich, Bowen (9) the superior and inferior colliculi are equally thick, about 5.0 mm, and the size limits range from 2.0 mm to 7.0 mm. Most authors including Bochenek-Reicher (1), Delmas and Pertuiset (3), Gegenbauer (4), Rauber-Kopsch (7), Rouvier (8), Sieglbauer (10), Sinielnikow (11) and Sobotta-Becher (12) admitted that the superior colliculi are bigger and flatter than the inferior ones. According to them, the superior colliculi are ovaly shaped and obliquely placed.

The present studies show that the superior colliculus length varies from 7.6 mm to 16.0 mm while their width 5.2 mm to 9.0 mm. The results obtained reached or exceeded the values presented in literature. The superior colliculus height in our studies is 2.0-7.2 mm. No data concerning the deviation angles of the colliculus axis were found, whose values for the superior colliculi in our studies are 38° - 65° .

Discussing the inferior colliculi R o u v i e r e (8), S i n i e l n i k o w (11) and others described them as spherical and smaller than the superior ones. S i e g l - b a u e r (10) defined them as narrow and high, B o c h e n e k - R e i c h e r (1) described the inferior colliculi as the spherically shaped structures with the base diameter about 5.0 mm. T e s t u t L. and L a t a r j e t A. (13) reported the 8.0 mm long and 6.0 mm wide inferior colliculi. L a z o r t h e s G. (5) mentioned the 8.0 mm and 6.0 inferior colliculi. B o ł g o w e t a l. (2) reported the dimensions of the inferior colliculi in adults as 4.1-6.3 mm long and 14.8-18.9 mm wide. The comparison of those values with the other data is impossible since no measurement methods and sexes were given.

In our studies the inferior colliculi were 5.0-9.0 mm long, 4.4-7.0 mm wide and 2.2-5.0 mm high.

Most anatomists B o c h e n e k - R e i c h e r (1), R a u b e r - K o p s c h (7), S i n i e l n i k o w (11) and others found out that the inferior colliculi were higher than the superior ones, S h e r m a n, C i t r i n, B a r k o v i c h, B o w e n (9) proved that the superior and inferior colliculi were of equal height (approximately 5.0 mm).

The examinations performed in 144 cadavers of both sexes, aged 18-91 show that in almost all of them, except few, the inferior colliculus height is smaller than the superior colliculus one and reaches 2.2-5.0 mm. The authors do not determine the deviation angle of the inferior colliculus axis from the median line, which in our studies is 46° - 85° .

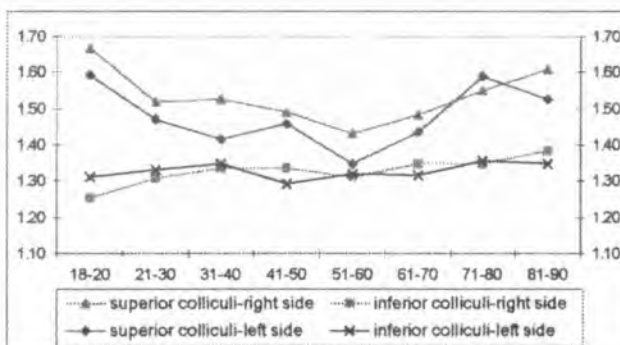


Fig. 1. The comparison of the length/width relations of the superior and inferior colliculi in males

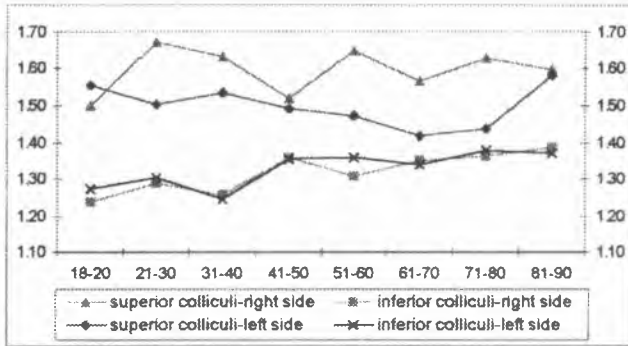


Fig. 2. The comparison of the length/width relations of the superior and inferior colliculi in females

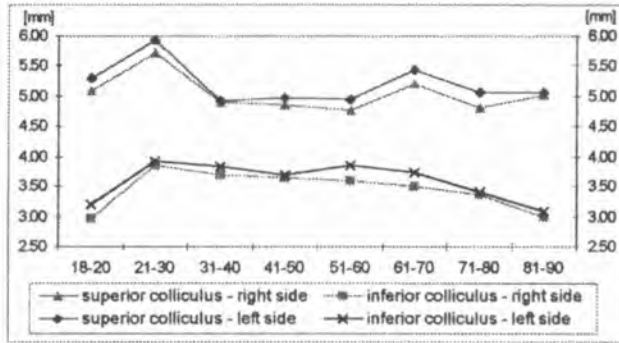


Fig. 3. The comparison of the superior and inferior colliculus heights in males

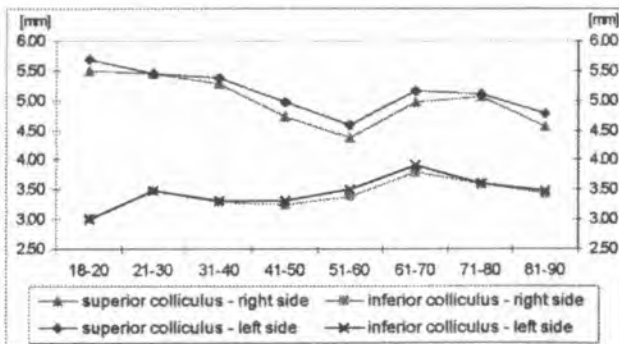


Fig. 4. The comparison of the superior and inferior colliculus heights in females

CONCLUSIONS

1. The studies determined: the deviation angles of the superior and inferior colliculus axes from the median line, the length, width and height of the superior and inferior colliculi.

2. In the majority of the age groups the sizes of the left side are bigger than the right side ones.

3. In all age groups the superior colliculi are ovally shaped, the deviation angles of the colliculus axes from the median line range from 38° to 65° .

4. The inferior colliculi are sphere-like in shape, their axes are more deviated from the median line than in the superior colliculi; the deviation angle 46° - 85° .

5. The difference between the mean length and width of the superior colliculi is 2.07-5.25 mm.

6. The difference between the mean length and width of the inferior colliculi is 0.5-2.50 mm and is significantly lower than the respective difference for the superior colliculi.

7. The average values of the superior colliculus heights in all age groups examined are higher than the height values of the inferior colliculi while in some individual cases which included 9 male and 8 female cadavers, the inferior colliculi are higher.

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STRESZCZENIE

Badania przeprowadzono na 144 zwłokach, 72 męskich i 72 żeńskich. Mierzono: kąt odchylenia osi wzgórków od linii pośrodkowej, długość, szerokość i wysokość wzgórków górnych i dolnych blaszki pokrywy na powierzchni grzbietowej pnia mózgu. Wymiary zebrano w tabelach, a ich zależności przedstawiono na wykresach.