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The Descending Aorta in Different Periods of Man's Life

Aorta zstępująca w różnych okresach życia człowieka

Нисходящая аорта в разные периоды человеческой жизни

The investigations and observations of the descending aorta were carried out in different ways. The measurements and observations were performed directly and with the most recent technical methods (7, 11). There are only a few works dealing with the size of the descending aorta; medical manuals provide very few data.

In the available literature the sizes of the descending aorta are presented as follows: Bochenek and Reicher (3) give the diameter of the thoracic aorta at its beginning as 23 mm, and the diameter of its ending as 20 mm, the diameter of the abdominal aorta at its beginning as 20 mm, its termination diameter amounting to 17 mm. They also give the degree of the diameter increase with age in adults. Steinberg et al. (15) present the aorta diameter at the level of the XI rib as 24.4 mm in women and 26.9 mm in men; above the renal arteries — 21.6 mm and 23.9 mm, below the renal arteries — 18.7 mm and 21.4 mm, above the division — 17.5 mm and 18.7 mm for women and men, respectively. Dentici (6) deals with the sizes of the aorta diameters and circumferences in the children up to 22 months of age. Schobinger et al. (14) claim children's aorta to be narrower than that of adults. Arvidsson (2) discussing children, and Hernandez et al. (9), discussing adults, compare the cross-section area of the aorta with the body surface. Goldberg et al. (7) examined the internal diameters of the aorta with ultrasounds and compared them with aortographical data.

As regards the length measurements, Bochenek and Reicher (3) give the length of the thoracic aorta as 190—220 mm and that of the abdominal aorta as 150 mm. The length of the abdominal aorta segment from its end to the coeliac artery is given by Anson et al. (1) as 11.5—14.5 cm, Cauldwell et al. (5) — 12.9 cm, Reicher (13) — 13.1 cm in adults and 4.3 cm in newborns; from its end to the superior mesenteric artery 10.5—12.5 cm by Anson et al. (1), 11.5 cm by Cauldwell et al. (5); from its end to the inferior mesenteric artery 2.5—5.5 cm by

Anson et al. (1), 4.5 cm by Cauldwell et al. (5), 4 cm by Schobinger et al. (14), 4.4 cm in adults and 1.3 cm in newborns by Reicher (13). Cauldwell et al. (5) have thoroughly examined the distances between the branches of the abdominal aorta as well as the distance of the end of the aorta from the promontory. Reicher (13) has given the distances between the branches of the abdominal aorta in adults and newborns. Naylor et al. (12) and Schobinger et al. (14) give distance between the superior mesenteric artery and the coeliac artery as 0.5—2 cm.

Authors concerned with the projection of the aorta on the vertebral column limit their interest mainly to its abdominal segment. Gray (8) places the beginning of the descending aorta at the level of the IV thoracic vertebra, Reicher (13) — at the III—IV thoracic vertebra. The position of the coeliac artery has been placed by various authors between the upper part Th_{XII} and the median third part L_I (Anson et al. (1), Cauldwell et al. (5), Isabellon (10), Naylor et al. (12), Reicher (13), Schobinger et al. (14)). The position of the superior mesenteric artery has been located within Th_{XII}—L_I to L_{II} (Anson et al. (1), Cauldwell et al. (5), Naylor et al. (12), Reicher (13), Schobinger et al. (14)). The end of the aorta was placed at the level between the middle of the L_{IV} and the upper part of the L_V (Anson et al. (1), Cauldwell et al. (5), Gray (8), Reicher (13), Schobinger et al. (14). Cattle et al. (4) give the height of the departure of the vessels in relation to the X rib.

The aim of this work was to obtain the measurements of the descending aorta as well as to determine its position, in relation to the vertebral column, and its course in different periods of man's life.

MATERIAL AND METHOD

The examined material consisted of 229 male and 183 female corpses, their age varying from 0 to 70 years and more, and 10 male and 8 female foetuses, the youngest being fixed in formalin.

The investigations were carried out on the dissection material of the Department of Normal Anatomy, the Department of Pathological Anatomy, the Department of Forensic Medicine of the Medical Academy, and other anatomical laboratories in Lublin.

The measurements were taken *in situ* in the course of anatomico-pathological or forensic obductions, immediately after the opening of the body cavities and excision of the viscera. The viscera of the thoracic cavity were removed after cutting the arterial ligament and the arch of the aorta between the brachio-cephalic trunk and the left common carotid artery. When taking out the viscera of the abdominal cavity short segments of the unpaired visceral branches of the abdominal aorta as well as the undamaged *crura* of the diaphragm, and the aortic opening were left untouched. To preserve the proper position of the aorta the left common carotic artery, the left subclavian artery, the paired branches of the aorta, and the undamaged common iliac arteries with their branchings were left uncut. The measurements were taken gradually as the aorta was exposed out of the surrounding tissue.

The measurements were taken with a properly adjusted anthropometer, a ruler and a slide with a nonius, and a protractor.

The obtained size values as well as their per cent values, calculated for the majority of the measurements, are presented in Tables; the data are arranged according to age and sex. Some of the sizes are presented in diagrams.

Fig. 1. The descending aorta: a — beginning, b — deviation of the thoracic aorta, c — coeliac artery, d — superior mesenteric artery, e — inferior mesenteric artery, f — end of the aorta, g — diaphragm. Points measurements of the aorta diameters are marked with arrows. a-f the length of the descending aorta, f-c the segment end of aorta — coeliac artery, f-d the segment end of aorta — superior mesenteric artery, f-e the segment end of aorta — inferior mesenteric artery

OBSERVATIONS AND RESULTS

The whole descending aorta was examined. The length, diameter and angular measurements were taken. The projection of the aorta on the vertebral column and its course in relation to the median line of the body were marked.

The length of the descending aorta was measured from its beginning to its end (Fig. 1 a-f). Apart from the overall length of the descending aorta the following segments were measured: 1) from the end of the aorta to the coeliac artery (Fig. 1 f-c), 2) from the end of the aorta to the superior mesenteric artery (Fig. 1 f-d), and c) from the end of the aorta to the inferior mesenteric artery (Fig. 1 f-e). The final point of each of the three segments was situated where the lower wall of the vessel deflected from the aorta. The measurements were taken in straight line between fixed points.

The diameters of the descending aorta were measured at its beginning, over the coeliac artery (above the diaphragm), at the level of the coeliac artery, between the coeliac artery and the superior mesenteric artery, below the superior mesenteric artery, below the renal arteries and above

the aorta division. The lowest diameter of the aorta was measured before arising of the common iliac arteries, at the point where the aorta was not yet dilated. The distance of that diameter from the end of the aorta is given in the paper. The initial diameter of the descending aorta was measured on two planes: the frontal plane and the sagittal plane. The other diameters were measured only in the frontal plane. They all are external diameters of the aorta.

As regards the angular measurements, the deviation of the thoracic aorta from the median line of the body, as well as the angle of the aorta division, were measured.

To enable the comparison of the course of the aorta along the vertebral column the following points of the vertebral column were marked: the beginning of the descending aorta, the deviation of the thoracic aorta from the median line, the departure point of the coeliac and the superior mesenteric arteries, and the end of the aorta. In the thoracic part the course of the thoracic aorta in relation to the vertebral column was examined.

Sizes of the descending aorta

Table 1 gives all the sizes of the descending aorta classified into groups according to age. The largest and the smallest sizes do not always apply to the same individuals.

In the group of foetuses two measurements of length are taken into consideration: a) the length of the trunk, b) body size. Moreover the foetuses were divided into two groups according to their size: smaller foetuses (I) and larger foetuses (II). The same division was preserved in the calculations presented below. In order to stress the differences and similarities, babies from 0—1 month old were divided into the following age groups: 0—3 days, 4—13 days, and 14—30 days. The group 0—3 days was subdivided into the group of premature babies and normal newborns. The size of the single newborns in the last group is below the accepted standard, but they have been placed there because they fulfilled all the other conditions accepted for normal newborns. In the other groups the subdivision into premature and normal newborns has not been preserved; hence the changes in the sizes. Length values have also been presented in per cent ratios.

The diameter of the beginning of the descending aorta was measured in the frontal and sagittal planes. The distribution of the predominance of either of the diameters in the age groups is as follows: the sagittal size prevails in foetuses; in infants, more often in boys than in girls,

either the frontal size prevails, or the sizes of the diameters are equal; the frontal sizes prevailed only in the boys' group of 2—3 months and in the girls' group of 14—30 days.

The aorta diameter over the coeliac artery was measured above the diaphragm at the point where the aorta is about to cross the diaphragm and does not yet become narrower. When passing the diaphragm, the frontal diameter of the aorta usually declined; the narrowing could be measured immediately after the aortic opening had been cut. In the measurements taken later these differences could not be observed. The same refers to the diameter between the coeliac artery and the superior mesenteric artery. The diameter below the superior mesenteric artery could be measured only when the renal arteries were arising below the superior mesenteric artery and not on the level of its lower border.

As already mentioned the lowest diameter of the aorta was measured, prior to division of the aorta into the common iliac arteries, at the point where the aorta does not yet dilate. The distance between the measured diameter and the end of the aorta is also presented. The examination of the two sizes and of their average values leads to the conclusion that in girls of about 9 months and boys of about 7 months old the size of the diameter becomes smaller than its distance from the end of the aorta. These differences increase with age; the greatest differences begin to show already at the age of five; in girls they are greatest about the age of 12. About the age of 19 the sizes become equal and the sizes of the diameter begin to prevail again.

The average values of the angle of the aorta division were increasing slightly with age; starting at the age of five all groups of both sexes showed average values to exceed 50°. In exceptional cases, especially in older people, the angle was smaller in its initial part, next its arms diverged. The extreme values of these sizes are given in brackets.

The per cent ratios of the sizes of the descending aorta

To show the mutual relations of different sizes according to age, the per cent ratios between them were calculated. Table 2 gives the per cent ratios of the length of the descending aorta to the individual's size of body, and the ratios of the length of the aorta segments and its diameter above the division to the overall length of the descending aorta. Table 3 gives the per cent ratios between the length values of particular segments of the abdominal aorta and the diameter above the aorta division. The figures in brackets in the Table referring to females apply

to a girl with developmental abnormalities of the urogenital system, and in the Table referring to males they apply to an individual with a horseshoe kidney. The other case of a horseshoe kidney does not exceed the values of its own group.

Considering the average values given in Table 2, it can be observed that the relation of the length of the aorta to the size of body is slightly higher in small children, particularly in the first month of age. The per cent values decrease significantly in boys in periods of their most intense growth. These deviations are less apparent in girls.

The comparison of the average values of the per cent ratios of the length of the segment called the end of the aorta — the coeliac artery to the overall length of the descending aorta shows an increase in average values in children 6—12 months old, and another increase in boys about 9—10 years of age, and in girls about 12 years of age. Similar values for the segment the end of the aorta — the superior mesenteric artery are slightly higher between 1—20 years of age. The comparison of the above mentioned average values for the segment the end of the aorta — the inferior mesenteric artery shows a slight increase in values with age. On the other hand, the mentioned per cent values for the aorta diameter above the division are higher at first, then from 4—5 to 18 years of age they decrease, to increase again later.

Table 3 gives the per cent ratios between the segments of the abdominal aorta. Taking into consideration the smaller segments in relation to the segment the end of the aorta — the coeliac artery, it can be concluded that some differences are more apparent in females than in males. Thus the per cent values of the segment the end of the aorta — the superior mesenteric artery to the segment the end of the aorta — the coeliac artery decrease between 6—12 months of age; they are most constant in adults. The per cent values of the segment the end of the aorta — the inferior mesenteric artery to the segment the end of the aorta — the coeliac artery decreases in the earlier period from 4 days to 3 months of age; its highest values are found in older people. The increase of these per cent values occurs simultaneously in both sexes in the second half of the first month and in the 8th month of age, whereas they decrease in both sexes at the age of 10 months. Apart from that the per cent values of the two segments in both sexes are not parallel.

The per cent ratio of the diameter above the division to the length of the segment the end of the aorta — the coeliac artery is high till the end of the first month of age, then it decreases until 4 years of age. This value does not change till 18 years of age, then it gradually increases.

The per cent ratios of the length of the segment the end of the

aorta — the inferior mesenteric artery to the length of the segment the end of the aorta — the superior mesenteric artery show slight differentiations.

The per cent values for the diameter above the division in relation to the segment the end of the aorta — the superior mesenteric artery show a decrease at the age of 6 months to 5 years, and maintain more or less the same level up to the age of 19, then an increase of values follows.

The per cent ratio of the diameter above the division to the length of the segment the end of the aorta — the inferior mesenteric artery is more or less similar to the one described above, only the decrease in values begins already after 4 months of age, and in both sexes at the age of 10 months a sudden increase in values takes place.

The course of the descending aorta

The course of the descending aorta in relation to the vertebral column and the median line of the body is not the same in different individuals. In its thoracic segment it is most frequently situated on the

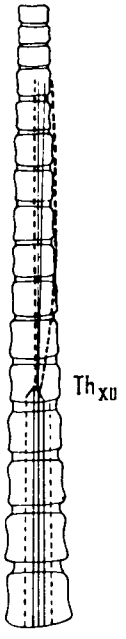

Fig. 2. The scheme showing the course of the descending aorta

anterior-left and left-anterior side of the vertebral column, and less often in front of the vertebral column or on its left side. In Fig. 2 rare types of the course of the descending aorta are marked by inter-

rupted line. The abdominal aorta most often runs in the median line of the body, or reaches the median line with its right border, or takes an intermediate position. It is seldom placed to the right, and only occasionally to the left from the median line of the body. These data are given in Table 4.

The line of the course of the thoracic aorta from its origin to the point where it approaches the median line of the body forms an angle with it which in the present paper is called the deviation of the aorta. This angle in its broadest limits equalled 0—8° in younger individuals, in adults and older individuals 0—10—20° and more, the most frequent value being 0—5°.

The projection on the vertebral column

Two Tables present the projections of the chosen points of the descending aorta on the vertebral column. Table 5 gives the projections of the beginning of the descending aorta and its end, Table 6 gives the projections of the aorta deflection, of the arising points of the coeliac artery and the superior mesenteric artery. The headings of both Tables present the groups according to age, the vertical column on the left contains the vertebra. In Table 5 there are two vertical columns with the vertebra: the left column indicates the projection of the beginning of the descending aorta, and the right one the projection of the aorta end. In Table 6 the projections of the aorta deviation are given first, then those of the arising points of the coeliac artery. Finally the projections of the arising points of the superior mesenteric artery are presented. Deviation 0 means that there is no deviation angle.

In Table 5 a gradual decrease of the beginning of the thoracic aorta with age can be observed. Table 6 reveals a decrease in the deviation value at the age of about 15. In the same period, a smaller decrease in the arising point of the coeliac artery and the superior mesenteric artery takes place.

Correlation

In the diagrams the following data are presented by means of curves: 1) age, 2) size, 3) the length of the descending aorta, 4) the length of the segment the end of the aorta — the coeliac artery, 5) the length of the segment the end of the aorta — the superior mesenteric artery, 6) the length of the segment the end of the aorta — the inferior mesenteric artery, and 7) the diameter of the aorta above the division.

The diagrams were made separately for males and females according

to the following age groups: foetuses, 0—1 month, 1 month — 1 year of age, 1—20 years, and over 20 years of age.

A comparison of the diagrams reveals a close similarity of the curves presenting the following segments: the end of the aorta — the coeliac artery, and the end of the aorta — the superior mesenteric artery. In general they are most similar to the curve of the length of the descending aorta. The curve of the diameter of the aorta is the flattest.

Regarding the curves in age groups it can be concluded that in the prenatal life they are rather flat but show parallel deflections.

In the first month of life the curves of the length of the descending aorta and the segments from the end of the aorta to the coeliac artery and superior mesenteric artery have small deviations; they are rather flat. A similar relation continues up to the third month of age, when the amplitudes begin to increase and there is a greater parallelism of the curves, which is visible as early as 4—6 months of age.

In the period between 1—20 years of age, the increase of the curves showing the body size and the length of the descending aorta is not parallel, at the age of about 10 the curve of the aorta increases more quickly.

In the period over 1 year of age up to older age, the deviations of the segments from the end of the aorta to the coeliac artery and the superior mesenteric artery are mobile but parallel. In more advanced age these deviations become smaller, their parallelism decreases.

The curve of the segment the end of the aorta — the inferior mesenteric artery generally follows the curves of the length of the descending aorta and the above mentioned segments, but its deviations are not always consistent with the deviations of the above mentioned curves; it frequently follows the deviations of the curve of body size. It is also more flattened.

The curve of the diameter above the division shows a slow increase with age and small deviations.

DISCUSSION

D e n t i c i (6) basing his observations on 26 children, examined two diameters of the abdominal aorta; his results are approximate to those given in the present paper. C a u l d w e l l et al. (5) gave the lengths of the abdominal aorta segments in the period 18—78 years of age without dividing them into separate age groups; they were dealing mostly with men; their results are close to those in this work. The results obtained by A n s o n et al. (1) are also alike. R e i c h e r (13) gave the lengths of the abdominal aorta segments in adults and newborns, his results being close to those obtained in this work. S t e i n b e r g e t a l. (15) presented

the sizes of the aorta diameters obtained through angiography for individuals of about 50 years of age. In both sexes the diameters above the division are similar to the results presented in this work, while the sizes of the diameters in the vicinity of the renal arteries given by Steinberg et al. (15) are rather higher. Because of an insufficient number of measurements in this age group presented in this paper, it is difficult to compare them with Steinberg's results mentioned above.

CONCLUSIONS

1) The results obtained in this work are: a) the sizes of the descending aorta in different age groups, b) the projections of some of its points on the vertebral column, c) the lines of the course of the descending aorta. These data are presented in Tables 1, 4—6.

2) On the basis of the obtained sizes a) the per cent ratios between these sizes were calculated, b) their variations according to age were proved. The results are given in Tables 2, 3.

3) In the diagrams following the paper some of the sizes are presented by curves and the correlation between them and age is presented.

4) It was proved that the size ratios and the position of the descending aorta in relation to the vertebral column changed with age.

5) The greatest reciprocal changes in the sizes of the descending aorta occur between 6 months and 20 years of age.

6) The changes in the sizes of the descending aorta do not occur parallel.

7) Individual deviations in the sizes of the aorta are small in the period up to 3 months and in older age.

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РЕЗЮМЕ

Измерения нисходящей аорты проводились на свежих трупах 229 мужчин и 183 женщин в возрасте от 0 до 70 лет и выше и на 18 плодах. Получены размеры полной длины нисходящей аорты и её участков от конца до а) чревного ствола, б) верхней брыжеечной артерии, в) нижней брыжеечной артерии. Диаметр аорты измерялся в начале нисходящей аорты над чревным стволом, на уровне чревного ствола, между чревным стволом и верхней брыжеечной артерией, под верхней брыжеечной артерией, под почечными артериями и над местом разветвления аорты. Измерялся также угол отклонения грудной аорты от срединной линии тела и угол разветвления аорты. Наблюдался ход аорты по отношению к срединной линии тела и позвоночнику. Приводятся проекции на позвоночник следующих пунктов: начала нисходящей аорты, отклонения грудной аорты, места ответвления чревного ствола и верхней брыжеечной артерии и разветвления аорты.

Полученные величины измерений и подсчитанные для многих из них проценты представлены в таблицах. Соотношение измерений представлено на диаграммах.

На основании вышеприведенных данных констатировано, что соотношение измерений нисходящей аорты и её расположение с возрастом изменяются.

STRESZCZENIE

Przeprowadzono pomiary aorty zstępującej na materiale 229 osobników męskich i 183 osobników żeńskich w wieku od 0 do powyżej 70 lat, oraz na 18 płodach. Badania przeprowadzano in situ na zwłokach świeżych. Otrzymano wymiary całkowitej długości aorty zstępującej oraz jej odcinków od końca aorty do: a) pnia trzewnego, b) t. krezkowej górnej i c) t. krezkowej dolnej. Średnice aorty mierzono na początku aorty zstępującej, nad pniem trzewnym, na wysokości pnia trzewnego,

pomiędzy pniem trzewnym i t. krezkową górną, poniżej t. krezkowej górnej, poniżej tt. nerkowych i powyżej podziału aorty. Mierzono również kąt odchylenia aorty piersiowej od linii pośrodkowej ciała i kąt podziału aorty. Obserwowano przebieg aorty w stosunku do linii pośrodkowej ciała i do kręgosłupa. Podano rzuty na kręgosłup następujących punktów: początku aorty zstępującej, odchylenia aorty piersiowej, odejścia pnia trzewnego i t. krezkowej górnej oraz podziału aorty.

Uzyskane wielkości wymiarów oraz obliczone dla wielu z nich wartości procentowe podano w tabelach. Dane w tabelach ułożono wzrastająco wg wieku, osobno dla płci męskiej i żeńskiej. Korelację wymiarów przedstawiono na wykresach.

Na podstawie powyższych danych stwierdzono, że stosunki wymiarowe aorty zstępującej i jej układ zmieniają się wraz z wiekiem.

EXPLANATORY NOTES TO THE DIAGRAMS

The sizes of the aorta are presented in the diagrams in the following age groups: A. foetuses, B. 0—1 month, C. 1 month — 1 year, D. 1—20 years, E. over 20 years.

In the diagram referring to foetuses both sexes are presented. Separate diagrams are given for both sexes for the other age groups.

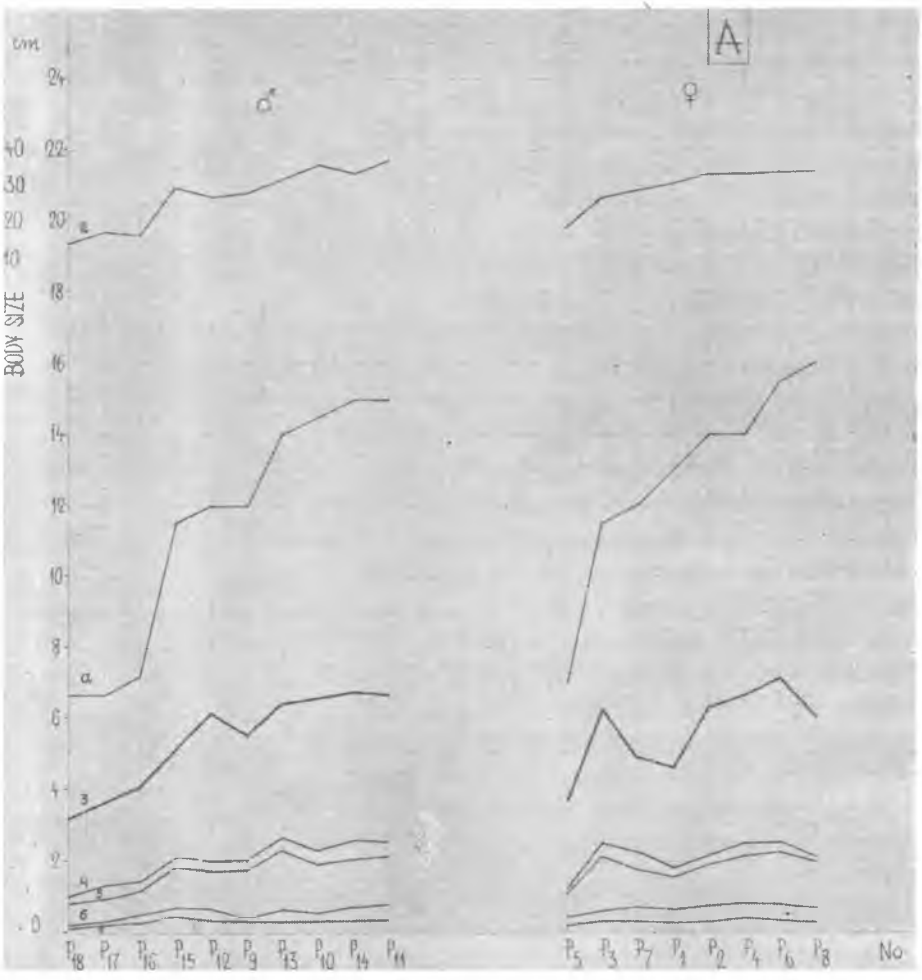
On the left side of each diagram (along the axes of ordinates) the values are given in centimetres from 0 onwards. Next to the axes of ordinates the body size values in centimetres and the age are given.

At the bases of the diagrams (on the axes of abscissae) the ordinal number of the cases examined is given (independent of age). On the diagram dealing with foetuses the letter "P" stands for "foetus".

The curves on the diagrams are marked as follows:

1. age,
2. size of body,
3. the length of the descending aorta,
4. the length of the segment, the end of the aorta — the coeliac artery,
5. the length of the segment, the end of the aorta — the superior mesenteric artery,
6. the length of the segment, the end of the aorta — the inferior mesenteric artery,
7. the diameter of the aorta above the division.

On the diagram dealing with foetuses the letter *a* stands for the length of the trunk.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BODY SIZE
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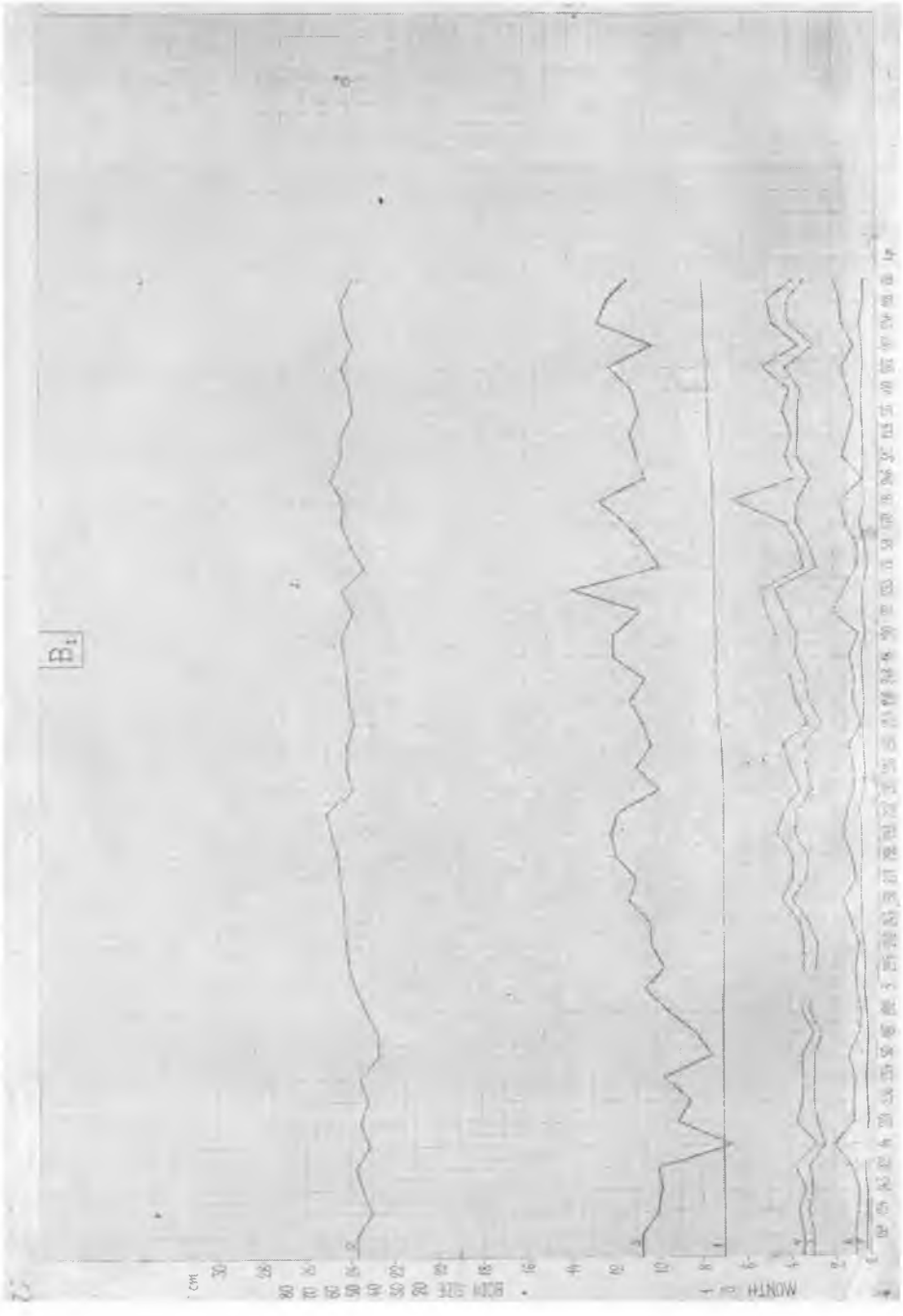
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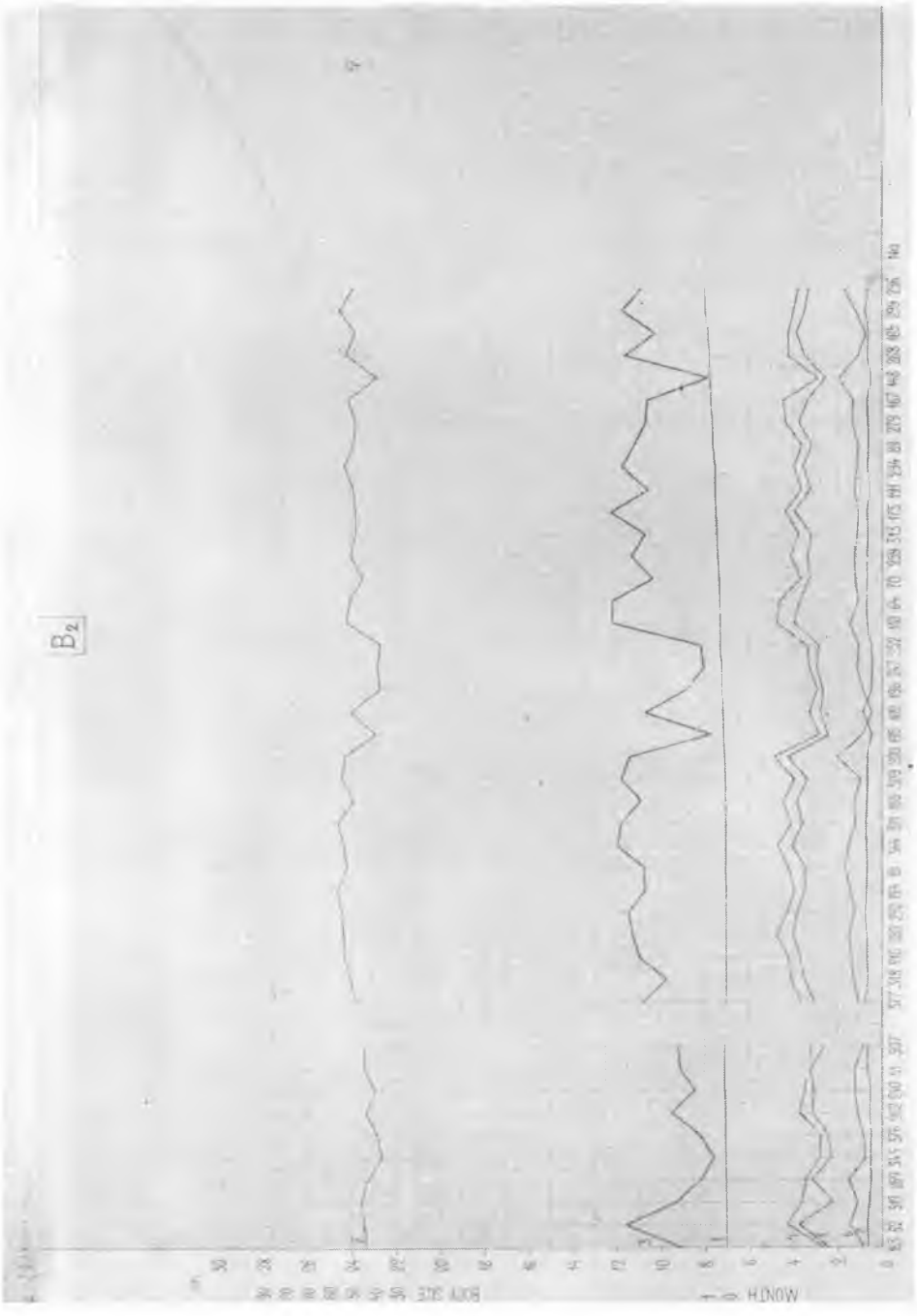
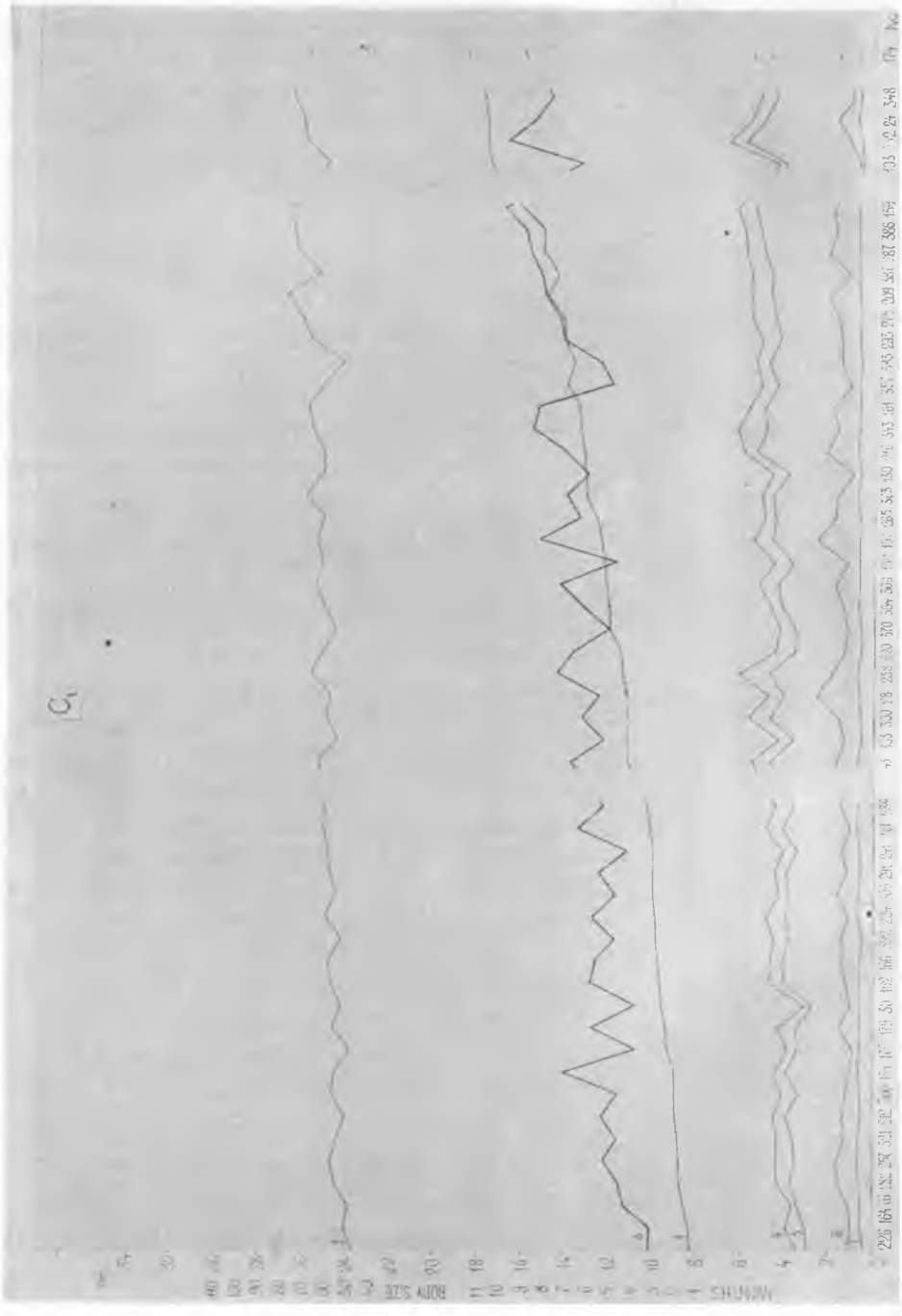
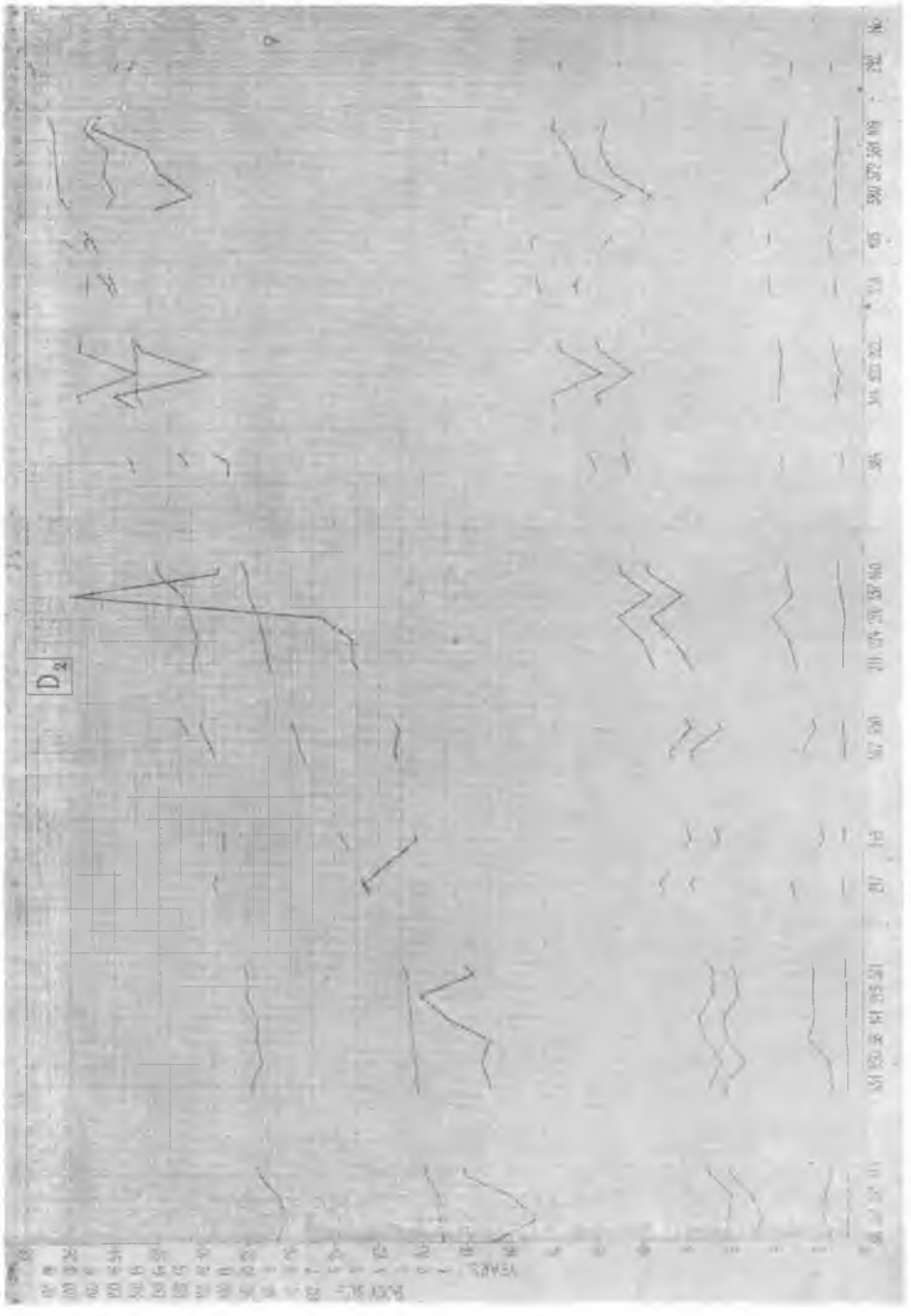
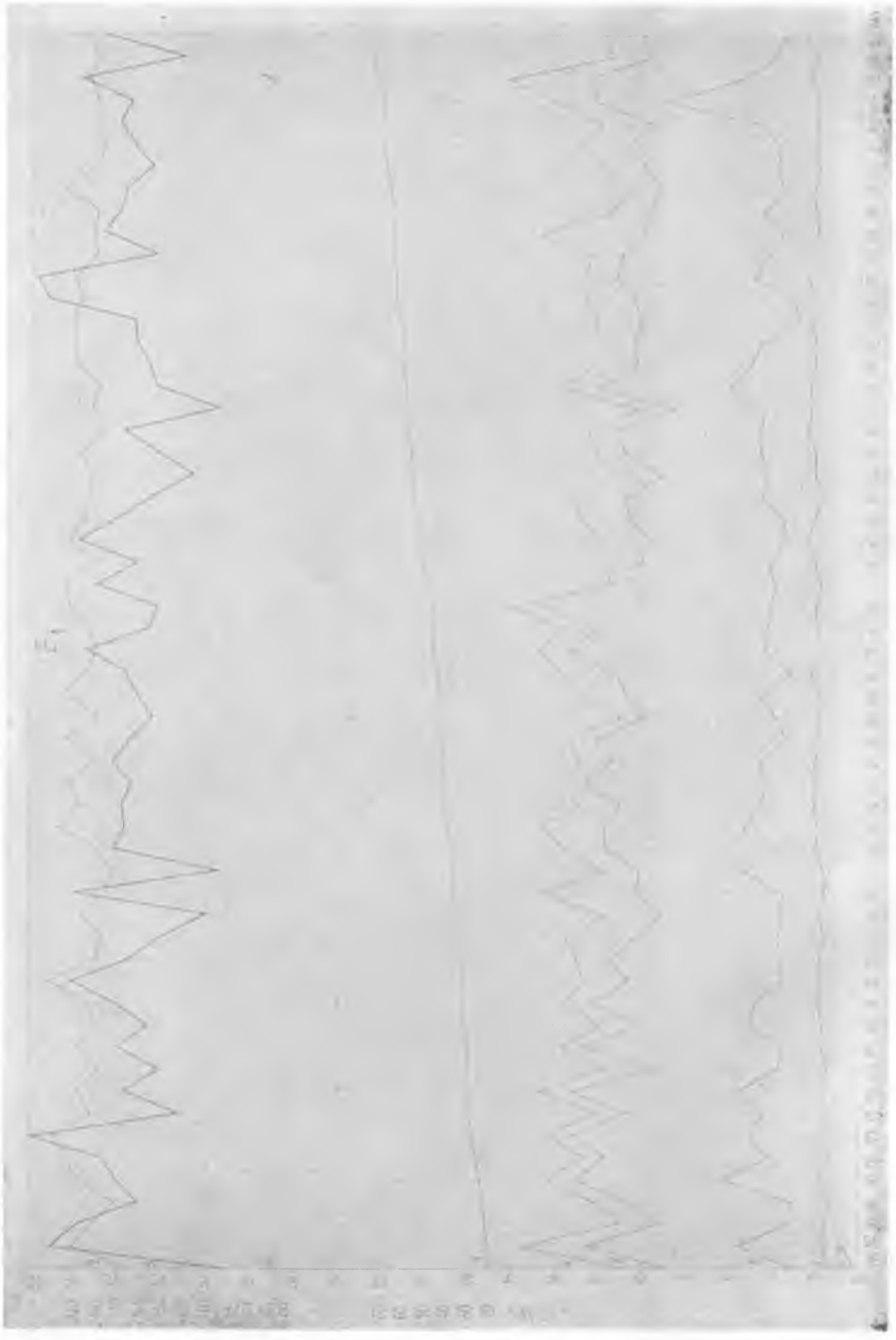
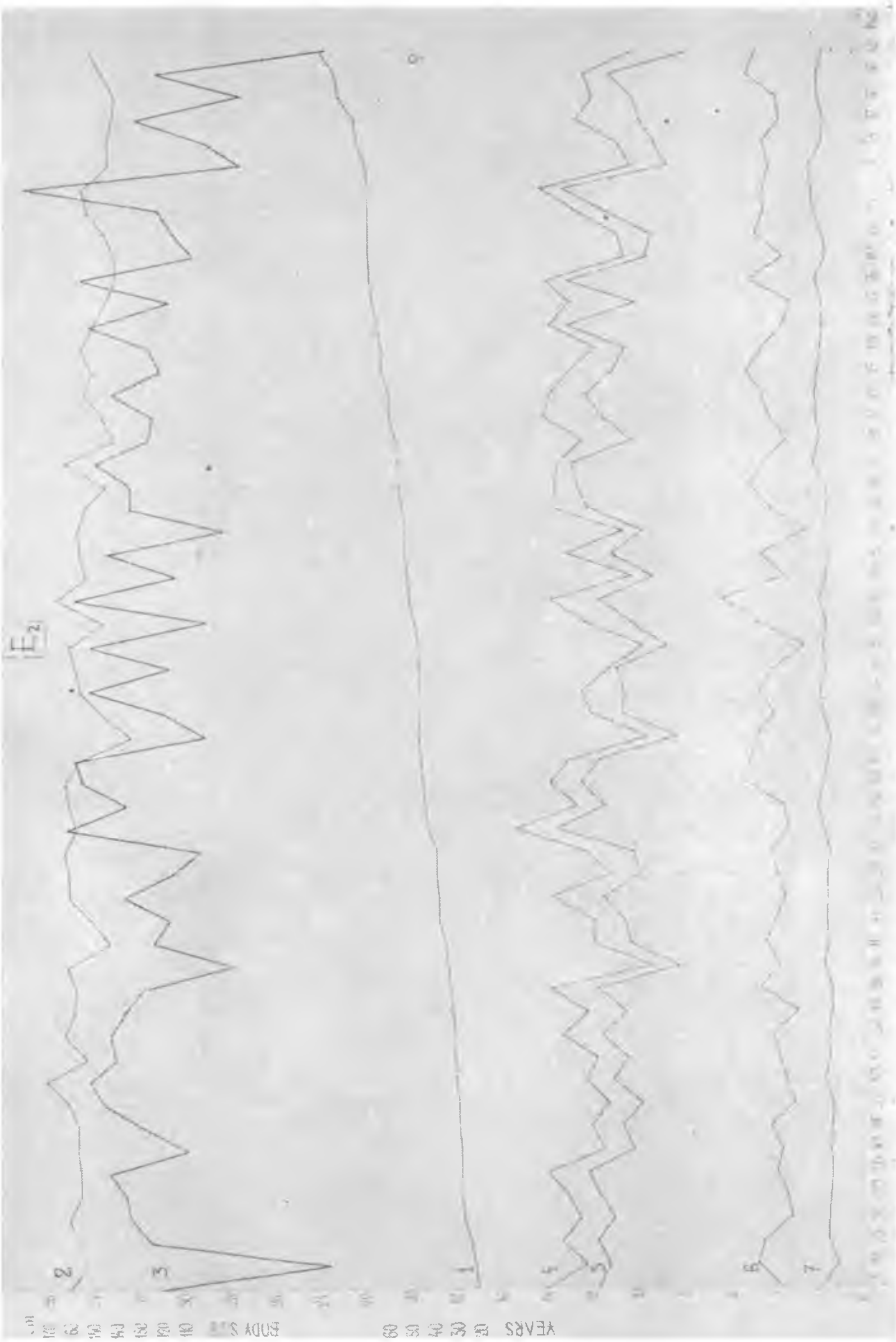

B2
BODY SIZE
MONTH




C2
MONTHS


D2





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Tab.1 The measurements of the descending aorta

No of cases	Age	Body size cm	The aorta length from end to beginning of desc. aorta mm	coeliac artery mm	superior mesenteric artery mm	inferior mesenteric artery mm	Diameters of descending aorta initial frontal mm	initial sagittal mm	above the level of coeliac artery mm	on the level of coeliac artery mm	above superior mes. artery mm	below superior mes. artery mm	below renal arteries mm	above division of aorta mm	division distance from end mm	Angle of aorta division
1	ploody I a	7,0	37,2	12,7	11,1	4,6	1,4	2,2	1,6	1,3	1,3	-	1,6	2,0	2,2	50°
	b	18,0														
	a	11,5-16,0 13,71														
7	" II b	26,5-34,0 31,29	46,2-71,5 60,00	18,2-25,2 22,77	15,8-22,4 19,73	6,4-10,3 7,31	2,6-4,3	3,1-5,0	3,0-4,2	2,4-3,7	2,3-3,8	2,8-4,1	2,4-4,2	2,9-4,2 3,37	1,5-5,0 3,70	40-55° 47°17'
10	0-2 days /premat./	36,0-45,5 41,90	75,7-116,0 90,09	26,7-42,4 33,08	22,3-37,3 28,08	7,4-14,7 10,58	4,2-6,5	4,5-5,8	4,7-6,7	4,6-6,1	4,3-5,5	4,2-5,3	4,0-5,5	4,7-6,4 5,45	3,0-6,0 4,24	28-53° 44°24'
12	0-3 days	48,0-56,0 52,63	97,3-119,4 111,24	36,5-48,3 42,46	30,4-42,2 36,62	9,6-30,0 13,47	4,0-7,6	4,7-7,1	6,8-8,2	6,5-7,7	6,4-7,5	5,4-7,3	6,2-7,1	6,0-7,3 6,70	3,8-8,0 5,93	32-53° 44°35'
10	4-13 "	37,0-52,0 44,70	77,2-122,0 100,3	28,0-47,5 36,50	24,5-39,5 31,04	4,5-14,0 10,31	2,6-6,9	3,9-5,6	4,8-7,1	4,5-7,0	6,0	6,0	3,9-6,3	4,3-8,6 6,01	2,0-6,5 4,15	40-62° 51°42'
11	15-30 "	38,0-55,0 49,09	78,0-123,0 108,70	28,9-44,5 39,50	25,2-39,7 34,10	7,1-19,2 12,30	5,1-6,1	4,3-7,8	4,8-9,1	6,5-8,0	6,6-7,2	6,4-7,2	5,9-7,1	4,7-7,2 6,30	2,0-5,9 4,25	35-58° 48°38'
5	1 month	40,0-54,0 49,20	76,0-124,5 107,72	26,1-46,4 38,88	22,3-39,2 31,62	6,6-13,8 10,92	4,6-6,8	5,1-6,2	5,1-8,2	6,1-6,4	-	-	5,7-6,3	4,2-7,2 5,66	1,7-6,5 4,44	38-50° 46°
10	2 months	50,0-58,0 53,40	103,3-130,0 116,46	35,4-51,0 42,91	29,7-43,0 36,47	9,4-16,5 11,89	5,3-7,6	5,1-8,4	6,7-9,0	5,9-7,4	5,5-7,0	5,3-7,0	4,9-6,8	5,1-6,6 5,83	4,4-6,8 5,48	40-50° 44°42'
5	3 "	55,0-60,0 57,60	114,6-136,0 124,50	36,4-53,0 44,60	32,7-44,9 39,00	8,2-16,6 12,60	5,7-8,0	5,9-8,5	7,0-8,7	7,2-7,3	6,3-6,6	5,5-7,0	5,7-6,1	5,7-6,2 6,00	4,6-7,5 5,68	32-55° 44°
5	4 "	50,0-64,0 58,80	107,5-137,7 124,30	39,3-55,6 46,40	34,0-47,1 40,40	11,7-16,5 14,20	5,0-7,7	6,0-7,9	7,4-8,9	7,0-7,8	6,2-7,3	6,4-7,1	5,5-7,8	5,5-6,5 6,08	4,0-6,0 5,14	39-60° 48°
2	5 "	58,0-60,0 59,00	121,5-124,0 122,75	43,3-44,7 44,00	35,2-39,9 37,55	11,0-16,1 13,55	7,8-8,7	7,8-8,7	7,4-8,3	6,9	6,8	-	5,9	5,7-6,5 6,10	5,0-5,4 5,20	40-60° 50°
4	6 "	55,0-64,0 59,75	110,3-158,0 131,70	43,8-63,2 50,75	35,5-51,0 42,20	11,8-17,5 14,33	7,4-8,9	7,4-8,6	5,7-9,1	5,5-7,8	5,4-6,1	5,0	5,0-7,1	5,5-6,4 5,95	3,0-9,0 5,83	50-58° 53°45'
1	7 "	60,0	135,5	49,9	41,5	14,6	5,8	8,0	8,1	8,4	6,4	-	5,3	5,5	5,5	50°
4	8 "	60,0-71,0 66,75	136,0-156,0 145,90	54,5-59,2 56,58	44,1-49,8 47,30	15,7-21,6 19,13	6,5-9,2	7,3-9,1	8,5-10,4	8,0-9,0	7,6-8,6	7,2-8,3	6,1-7,6	5,6-6,4 6,10	3,0-7,9 5,60	40-60° 48°30'
4	9 "	59,0-72,0 62,75	140,8-154,5 147,3	44,4-61,1 52,00	38,0-54,4 44,45	13,9-19,7 15,95	6,9-10,1	5,2-10,1	9,3-11,5	8,0-9,7	7,5-9,2	7,1	6,2-7,3	6,2-7,1 6,77	5,0-8,9 7,13	50-57° 51°45'
3	10 "	57,0-72,0 64,76	141,0-153,0 145,67	46,2-61,1 54,00	38,5-51,4 43,73	7,6-15,8 12,17	5,1-6,6	8,2-10,1	8,5-10,5	7,8-9,8	6,7-8,0	-	6,7-6,9	6,4-7,0 6,80	6,1-12,0 9,05	42-56° 50°
1	11 "	75,0	163,9	65,6	63,9	18,9	7,8	8,9	9,1	8,3	7,2	-	7,3	7,00	10,0	60°
8	1 year	72,0-94,0 79,75	146,0-188,0 168,15	55,6-71,4 64,43	46,4-61,0 53,54	14,5-26,0 18,70	6,1-9,0	6,0-11,5	8,2-9,4	7,1-8,8	6,4-7,7	5,5-7,5	6,3-7,7	6,4-7,7 7,11	3,5-12,5 8,55	40-60° 50°38'
6	2 years	83,0-90,0 86,83	169,5-202,0 180,08	64,5-74,9 69,53	53,6-63,4 59,45	14,3-25,0 20,42	8,0-12,0	9,2-12,3	10,0-11,5	8,9-9,1	8,4-8,7	7,3-7,8	7,0-7,9	6,8-8,0 7,54	6,5-13,7 9,32	50-58° 54°20'
-	4 "	89,0-105,0 97,00	184,5-227,0 205,75	71,7-92,2 81,95	64,7-78,5 71,60	19,1-32,8 25,95	9,2-9,3	9,9-10,2	9,3-9,8	8,2-8,9	7,6	7,2	6,6-7,9	7,1-9,0 8,05	9,2-12,0 10,60	47-50° 48°30'
2	5 "	100,0-102,0 101,0	203,0-206,0 204,5	76,0-78,8 77,4	65,2-65,5 65,35	18,0-21,7 19,85	9,1-11,6	11,5-13,0	10,7-11,4	9,9-11,0	9,1-10,3	8,4	8,7	8,6-8,8 8,70	10,8-11,2 11,0	52-60° 56°
2	7 "	105,0-110,0 107,50	211,0-213,0 212,00	78,6-88,0 83,30	65,0-78,4 71,70	21,8-27,5 24,65	10,7-12,3	9,8-14,1	11,6-12,1	10,8-11,4	9,5-10,2	8,7-9,6	9,3	8,3-9,0 8,65	12,0-12,4 12,20	48-68° 58°
2	8 "	120,0-129,0 124,50	225,0-257,0 241,00	88,2-102,9 95,55	76,7-89,1 82,90	26,7-33,6 30,15	10,7-11,7	12,0-14,8	12,0-12,8	10,5-11,4	10,0-10,5	9,8-10,9	9,5-10,2	9,4-9,9 9,65	9,6-14,0 11,80	54-55° 54°30'
6	9 "	112,0-131,0 120,02	232,0-360,0 268,08	96,4-111,5 102,40	79,1-98,0 88,72	31,0-41,3 34,83	9,3-12,3	10,0-16,0	10,9-13,0	10,4-11,8	9,8-11,5	-	8,7-10,4	8,1-11,8 9,93	10,0-20,0 13,72	40-60° 54°10'
2	12 "	132,0-142,0 137,00	257,0-288,0 272,50	104,8-122,8 113,80	95,4-107,6 101,50	37,0-37,4 37,20	9,8-11,2	11,4-13,4	10,5-13,3	10,9-11,8	10,5-11,2	11,0-11,4	9,3-9,9	9,8-10,2 10,00	17,5-19,8 18,65	54-62° 58°
4	15 "	140,0-167,0 157,50	297,0-340,0 324,70	118,9-142,0 133,10	105,0-122,0 116,20	37,2-48,6 40,38	9,7-13,5	12,8-16,7	12,3-13,9	10,9-14,6	10,8-13,5	10,7-12,8	10,1-12,6	10,5-13,7 12,28	13,0-19,0 16,60	50-60° 56°45'
1	16 "	162,0	343,0	148,0	131,1	43,0	13,0	17,5	16,8	15,5	15,0	14,3	12,4	12,6	16,0	58°
1	17 "	163,0	363,0	151,0	116,0	42,5	15,0	21,0	15,0	16,2	-	-	-	15,5	13,9	60°
4	18 "	150,0-164,0 155,50	305,0-350,0 325,00	109,0-141,0 128,0	96,8-119,0 111,88	33,3-44,0 37,68	12,5-13,8	13,1-15,9	13,9-16,4	12,7-13,8	10,9-13,2	11,0-14,3	10,1-12,3	11,2-13,1 12,05	13,0-21,3 16,65	40-62° 53°30'
1	19 "	148,0	331,0	137,5	110,4	32,1	15,0	15,0	14,9	13,0	12,9	12,7	11,7	15,0	13,0	69°
10	20-29"	152,0-170,0 158,20	235,0-341,0 313,10	112,4-140,0 125,70	97,8-121,0 110,80	30,2-46,7 37,10	10,0-15,5	11,0-21,2	14,5-19,2	15,1-16,5	13,3-15,6	15,7-16,0	12,7-14,2	11,3-18,5 14,75	10,0-18,5 14,45	48-70° 60°06'
10	30-39"	142,0-162,0 156,40	277,0-332,0 312,50	93,0-137,8 120,80	81,0-116,9 104,00	28,5-45,0 38,10	5,5-17,1	14,4-21,5	17,1-20,0	14,0-17,9	14,8-17,5	14,4-15,8	13,0-16,8	13,9-17,0 15,15	9,5-17,0 12,80	57-70° 61°18'
10	40-49"	133,0-162,0 153,00	290,0-351,0 324,10	95,0-153,0 121,70	82,0-135,0 107,98	26,0-51,0 41,20	13,0-22,0	15,5-20,0	18,7-24,7	-	18,8-21,0	20,4	15,8-19,7	14,5-19,7 17,04	6,0-18,0 13,71	42-70° 54°48'
10	50-59"	140,0-165,0 152,50	282,0-347,0 320,80	102,5-141,0 128,50	92,5-128,0 113,10	25,6-61,5 41,90	17,0-18,3	23,1	16,6-24,5	-	14,3	-	15,0	15,5-21,8 18,34	9,0-14,0 12,10	46-88° 59°54'
10	60-69"	140,0-155,0 147,20	274,0-370,0 317,00	102,0-142,0 123,80	86,0-132,0 109,49	31,7-51,0 42,24	-	-	20,0-26,2	-	-	-	-	16,0-23,4 19,58	8,5-20,0 12,10	35-70° 55°48'
5	70 " and over	140,0-151,0 144,00	237,0-321,0 286,80	101,0-126,0 115,40	77,0-112,0 96,20	36,5-51,0 43,20	-	-	-	-	-	-	-	17,0-19,9 18,38	14,5	30-80° 58°

Tab.1 The measurements of the descending aorta

No of cases	Age	Body size cm	The aorta length from end to beginning of desc. aorta mm	coeliac artery mm	superior mesenteric artery mm	inferior mesenteric artery mm	Diameters of descending aorta initial frontal mm	initial sagittal mm	above the level of coeliac artery mm	on the level of coeliac artery mm	above superior mes. artery mm	below superior mes. artery mm	below renal arteries mm	above division of aorta mm	distance from end mm	Angle of aorta division
3	foe- I tuses	a 6.7-7.2 6,87	32,7-41,2 36,83	10,1-14,5 12,57	8,4-11,9 10,03	2,7-5,2 3,70	1,4-2,1	2,3-2,9	1,5-2,2	1,5-1,9	1,5-1,8	1,5-1,8	1,5-2,2	1,7-2,9 2,37	1,4-2,5 1,97	35-55° 47°
		b 14,0-17,0 15,67														
7	" II	a 11,5-15,0 13,43	52,0-67,8 62,01	20,3-26,4 23,29	17,3-23,2 19,74	4,2-8,0 6,54	1,7-4,0	2,9-4,9	2,4-4,6	2,0-4,4	2,1-4,1	2,1-4,3	2,5-4,4	3,2-5,0 3,66	3,2-5,7 4,20	45-60° 50°
		b 27,0-37,0 31,79														
11	0-1 day /premat./	37,0-47,0 42,45	66,4-107,3 90,98	28,4-38,1 34,13	24,8-31,9 29,14	7,9-20,0 11,45	4,5-5,7	3,7-5,8	5,0-6,6	5,2-5,9	5,5	-	4,5-6,0	4,6-6,6 5,30	1,0-5,0 3,88	33-58° 43°55'
12	0-2days	47,0-60,0 52,42	97,4-121,0 108,57	33,6-45,3 38,96	27,3-38,8 32,73	8,5-15,3 11,72	5,7-7,1	4,8-6,6	6,0-9,3	5,7-8,2	5,7-7,5	6,8-7,5	5,1-6,9	5,4-8,0 6,61	3,5-7,1 5,45	40-60° 48°38'
10	7-12 "	43,0-53,0 49,90	98,5-139,0 113,03	31,9-52,4 40,04	25,8-46,5 34,63	7,6-20,4 11,95	5,2-6,2	5,7-7,3	6,9-8,3	6,0-7,7	-	-	5,2-7,2	4,5-7,6 6,15	3,0-7,0 5,03	41-60° 50°
11	14-29 "	48,0-58,0 51,55	101,5-127,0 114,31	35,0-65,5 44,07	28,0-41,2 35,57	6,2-19,0 13,62	5,9-6,6	6,0-7,4	6,4-8,9	5,7-8,0	6,9-7,1	6,8	5,0-6,4	5,7-7,4 6,25	3,0-6,0 3,74	39-68° 49°33'
6	1 month	47,0-57,0 52,00	101,9-122,7 112,07	34,5-44,0 40,01	30,2-37,1 33,85	10,1-16,1 12,98	4,3-7,0	4,5-6,2	5,6-8,9	4,7-8,2	6,4-7,4	6,6	3,9-6,8	3,9-6,9 5,72	2,0-6,8 3,47	45-58° 50°30'
10	2 months	48,0-59,0 54,30	108,0-141,0 122,59	31,0-48,6 43,12	27,9-40,6 36,80	9,0-15,2 12,32	5,5-7,9	5,3-7,0	6,9-9,5	6,4-8,2	5,6-7,4	6,5	5,0-6,9	4,8-6,6 5,89	4,5-7,0 5,50	30-58° 45°42'
5	3 "	55,0-60,0 57,90	112,0-134,0 122,24	40,5-48,4 44,04	34,3-40,8 37,78	10,3-16,2 13,38	6,5-9,6	6,0-8,7	7,7-10,8	6,0-8,2	6,8-8,4	6,3-7,3	5,5-6,6	5,5-7,1 6,36	4,3-6,9 5,94	45-66° 51°
6	4 "	54,0-66,0 59,67	123,0-144,0 133,20	43,0-61,0 51,30	35,8-47,4 42,35	13,0-25,5 17,15	6,3-8,8	6,6-7,8	8,4-10,0	6,6-8,8	6,9-8,2	-	5,7-9,5	5,2-7,0 6,12	4,0-8,5 5,66	45-62° 51°30'
7	5 "	55,0-67,5 62,19	117,0-152,0 133,24	42,7-54,5 48,28	35,6-46,0 41,26	11,6-26,0 15,83	6,4-8,0	6,0-8,4	8,2-10,7	7,3-9,1	6,6-8,1	6,9-7,8	6,4-6,6	5,7-6,7 6,31	4,6-10,7 7,06	38-55° 47°13'
9	6 "	51,0-74,0 63,67	118,8-155,0 139,24	45,5-61,6 53,38	38,6-53,1 45,94	9,0-21,6 15,58	6,4-9,9	5,9-10,5	7,5-11,0	7,4-10,0	6,9-8,1	5,8-7,5	4,9-7,5	5,3-7,5 6,67	3,8-12,2 6,56	44-60° 54°27'
5	7 "	62,0-77,0 67,60	137,5-151,5 144,36	50,9-55,8 54,58	42,8-48,0 45,76	11,0-20,7 16,12	6,8-8,0	7,0-9,0	9,0-10,3	7,5-8,7	6,5-7,5	7,1-7,9	6,0-7,9	5,9-6,9 6,34	6,0-9,3 7,54	40-53° 47°48'
3	8 "	72,0-74,0 72,67	153,0-158,1 155,70	57,5-58,6 58,03	49,8-51,4 50,33	17,1-20,9 19,47	7,6-9,1	8,7-10,1	9,6-10,8	8,5-9,4	8,0-8,8	7,5-8,2	7,3-7,6	7,0-7,8 7,30	7,5-10,0 8,70	50-65° 56°20'
1	9 "	74,0	168,1	62,3	54,0	18,1	12,0	11,8	9,0	-	-	-	-	7,2	7,5	70°
4	10 "	58,0-75,0 68,00	133,5-167,0 150,38	43,8-66,4 54,55	39,7-58,5 48,28	6,5-17,0 10,85	8,0-8,8	6,4-8,8	7,8-13,0	5,9-9,2	6,7-7,9	-	6,0-7,5	5,2-7,9 6,38	4,1-7,8 6,47	47-70° 58°30'
1	11 "	67,0	160,0	55,5	47,6	16,5	9,9	9,5	10,1	9,0	-	-	7,8	7,1	4,6	50°
9	1 year	72,0-88,0 79,22	143,5-207,0 167,84	59,7-82,5 65,79	47,8-72,0 57,81	15,6-24,0 20,00	7,4-12,2	7,0-11,5	10,0-12,4	8,2-11,2	7,6-10,4	9,0	6,7-9,6	6,4-8,7 7,54	7,2-14,5 9,68	48-61° 56°07'
6	2 years	68,0-90,0 80,50	162,0-197,0 177,92	59,6-94,3 69,65	51,2-71,1 58,82	17,8-23,1 19,80	8,7-11,2	10,0-12,9	9,0-11,8	8,6-10,1	7,7-9,1	7,8-8,8	7,0-8,3	7,0-8,3 7,67	7,5-10,5 8,47	50-70° 54°40'
2	3 "	95,0-101,0 98,00	174,0-192,5 183,25	73,0-80,5 76,75	59,5-69,0 64,25	19,6-21,1 20,35	6,9-11,8	10,4-11,8	10,7-11,0	8,3-10,6	7,9-9,9	-	8,0-8,7	7,1-8,2 7,65	10,5-11,8 11,15	57-58° 57°30'
6	4 "	98,0-107,0 101,83	174,0-220,0 191,50	63,5-87,3 72,05	54,6-77,8 62,18	17,4-30,0 21,87	7,5-11,0	8,5-12,4	9,7-11,9	8,7-10,5	8,2-9,6	7,9-9,8	7,4-10,1	8,0-9,2 8,50	7,8-12,1 9,83	45-60° 53°40'
6	5 "	95,0-115,0 108,30	187,4-226,0 209,68	76,7-95,0 90,01	65,6-85,7 79,05	22,9-35,5 29,63	7,3-11,6	8,2-13,2	9,6-13,4	9,2-11,5	8,6-10,6	7,9-10,8	7,8-9,8	7,3-9,1 8,35	12,4-16,0 14,07	50-70° 59°20'
2	6 "	109,0-118,0 113,50	230,0-253,0 241,50	98,7-110,0 104,35	86,0-89,1 87,55	26,0-28,6 27,30	12,6	12,6	12,5	12,1	11,0	-	10,10	8,1-10,7 9,40	10,8-12,5 11,65	50-60° 55°
4	7 "	110,0-130,0 120,25	203,0-248,0 228,25	80,0-95,0 90,88	71,5-81,6 76,98	24,6-36,6 28,88	10,1-10,8	8,5-15,2	10,3-13,3	9,3-12,3	9,8-11,5	-	9,6-10,2	9,0-10,6 9,53	7,2-15,0 10,93	55-58° 57°15'
1	8 "	107,0	232,0	89,0	74,4	29,2	13,9	9,5	13,8	11,8	10,8	11,4	10,1	9,6	14,0	70°

Tab.1 The measurements of the descending aorta

No of cases	Age	Body size cm	The aorta length from end to: beginning of desc. aorta mm	coeliac artery mm	superior mesenteric artery mm	inferior mesenteric artery mm	Diameters of descending aorta: initial frontal mm	initial sagittal mm	above the level of coeliac artery: above mm	on mm	above superior mes. artery mm	below mm	below renal arteries mm	above division of aorta mm	division distance from end mm	Angle of aorta division
		a 6,7-7,2 6,87														
3	foe- I tuses	b 14,0-17,0 15,67	32,7-41,2 36,83	10,1-14,5 12,57	8,4-11,9 10,03	2,7-5,2 3,70	1,4-2,1	2,3-2,9	1,5-2,2	1,5-1,9	1,5-1,8	1,5-1,8	1,5-2,2	1,7-2,9 2,37	1,4-2,5 1,97	35-55° 47°
		a 11,5-15,0 13,43														
7	" II	b 27,0-37,0 31,79	52,0-67,8 62,01	20,3-26,4 23,29	17,3-23,2 19,74	4,2-8,0 6,54	1,7-4,0	2,9-4,9	2,4-4,6	2,0-4,4	2,1-4,1	2,1-4,3	2,5-4,4	3,2-5,0 3,66	3,2-5,7 4,20	45-60° 50°
11	0-1 day /premat./	37,0-47,0 42,45	66,4-107,3 90,98	28,4-38,1 34,13	24,8-31,9 29,14	7,9-20,0 11,45	4,5-5,7	3,7-5,8	5,0-6,6	5,2-5,9	5,5	-	4,5-6,0	4,6-6,6 5,30	1,0-5,0 3,80	33-58° 43°55'
12	0-2days	47,0-60,0 52,42	97,4-121,0 108,57	33,6-45,3 38,96	27,3-38,8 32,73	8,5-15,3 11,72	5,7-7,1	4,8-6,6	6,0-9,3	5,7-8,2	5,7-7,5	6,8-7,5	5,1-6,9	5,4-8,0 6,61	3,5-7,1 5,45	40-60° 48°38'
10	7-12 "	43,0-53,0 49,90	98,5-139,0 113,03	31,9-52,4 40,04	25,8-46,5 34,63	7,6-20,4 11,95	5,2-6,2	5,7-7,3	6,9-8,3	6,0-7,7	-	-	5,2-7,2	4,5-7,6 6,15	3,0-7,0 5,03	41-60° 50°
11	14-29 "	48,0-58,0 51,55	101,5-127,0 114,31	35,0-65,5 44,07	28,0-41,2 35,57	6,2-19,0 13,62	5,9-6,6	6,0-7,4	6,4-8,9	5,7-8,0	6,9-7,1	6,8	5,0-6,4	5,7-7,4 6,25	3,0-6,0 3,74	39-68° 49°33'
6	1 month	47,0-57,0 52,08	101,9-122,7 112,07	34,5-44,0 40,01	30,2-37,1 33,85	10,1-16,1 12,98	4,3-7,0	4,5-6,2	5,6-8,9	4,7-8,2	6,4-7,4	6,6	3,9-6,8	3,9-6,9 5,72	2,0-6,8 3,47	45-58° 50°30'
10	2 months	48,0-59,0 54,30	108,0-141,0 122,59	31,0-48,6 43,12	27,9-40,6 36,80	9,0-15,2 12,32	5,5-7,9	5,3-7,0	6,9-9,5	6,4-8,2	5,6-7,4	6,5	5,0-6,9	4,8-6,6 5,89	4,5-7,0 5,50	30-58° 45°42'
5	3 "	55,0-60,0 57,90	112,0-134,0 122,24	40,5-48,4 44,04	34,3-40,8 37,78	10,3-16,2 13,38	6,5-9,6	6,0-8,7	7,7-10,8	6,0-8,2	6,8-8,4	6,3-7,3	5,5-6,6	5,5-7,1 6,36	4,3-6,9 5,94	45-66° 51°
6	4 "	54,0-66,0 59,67	123,0-144,0 133,20	43,0-61,0 51,30	35,0-47,4 42,35	13,0-25,5 17,15	6,3-8,8	6,6-7,8	8,4-10,0	6,6-8,8	6,9-8,2	-	5,7-9,5	5,2-7,0 6,12	4,0-8,5 5,66	45-62° 51°30'
7	5 "	55,0-67,5 62,19	117,0-152,0 133,24	42,7-54,5 48,28	35,6-46,0 41,26	11,6-26,0 15,83	6,4-8,0	6,0-8,4	8,2-10,7	7,3-9,1	6,6-8,1	6,9-7,8	6,4-6,6	5,7-6,7 6,31	4,6-10,7 7,06	38-55° 47°13'
9	6 "	51,0-74,0 63,67	118,8-155,0 139,24	45,5-61,6 53,38	38,6-53,1 45,94	9,0-21,6 15,58	6,4-9,9	5,9-10,5	7,5-11,0	7,4-10,0	6,9-8,1	5,8-7,5	4,9-7,5	5,3-7,5 6,67	3,8-12,2 6,56	44-60° 54°27'
5	7 "	62,0-77,0 67,60	137,5-151,5 144,36	50,9-55,8 54,58	42,8-48,0 45,76	11,0-20,7 16,12	6,8-8,0	7,0-9,0	9,0-10,3	7,5-8,7	6,5-7,5	7,1-7,9	6,0-7,9	5,9-6,9 6,34	6,0-9,3 7,54	40-53° 47°48'
3	8 "	72,0-74,0 72,67	153,0-158,1 155,70	57,5-58,6 58,03	49,8-51,4 50,33	17,1-20,9 19,47	7,6-9,1	8,7-10,1	9,6-10,8	8,5-9,4	8,0-8,8	7,5-8,2	7,3-7,6	7,0-7,8 7,30	7,5-10,0 8,70	50-65° 56°20'
1	9 "	74,0	163,1	62,3	54,0	18,1	12,0	11,8	9,0	-	-	-	-	7,2	7,5	70°
4	10 "	58,0-75,0 68,00	133,5-167,0 150,38	43,8-66,4 54,55	39,7-58,5 48,28	6,5-17,0 10,85	8,0-8,8	6,4-8,8	7,8-13,0	5,9-9,2	6,7-7,9	-	6,0-7,5	5,2-7,9 6,38	4,1-7,8 6,47	47-70° 58°30'
1	11 "	67,0	160,0	55,5	47,6	16,5	9,9	9,5	10,1	9,0	-	-	7,8	7,1	4,6	50°
9	1 year	72,0-88,0 79,22	143,5-207,0 167,84	59,7-82,5 65,79	47,8-72,0 57,81	15,6-24,0 20,00	7,4-12,2	7,0-11,5	10,0-12,4	8,2-11,2	7,6-10,4	9,0	6,7-9,6	6,4-8,7 7,54	7,2-14,5 9,68	48-61° 56°07'
6	2 years	68,0-90,0 80,50	162,0-197,0 177,92	59,6-94,3 69,65	51,2-71,1 58,82	17,8-23,1 19,80	8,7-11,2	10,0-12,9	9,0-11,8	8,6-10,1	7,7-9,1	7,8-8,8	7,0-8,3	7,0-8,3 7,67	7,5-10,5 8,47	50-70° 54°40'
2	3 "	95,0-101,0 98,00	174,0-192,5 183,25	73,0-80,5 76,75	59,5-69,0 64,25	19,6-21,1 20,35	6,9-11,8	10,4-11,8	10,7-11,0	8,3-10,6	7,9-9,9	-	8,0-8,7	7,1-8,2 7,65	10,5-11,8 11,15	57-58° 57°30'
6	4 "	98,0-107,0 101,83	174,0-220,0 191,50	63,5-87,3 72,05	54,6-77,8 62,18	17,4-30,0 21,87	7,5-11,0	8,5-12,4	9,7-11,9	8,7-10,5	8,2-9,6	7,9-9,8	7,4-10,1	8,0-9,2 8,50	7,8-12,1 9,83	45-60° 53°40'
6	5 "	95,0-115,0 108,30	187,4-226,0 199,68	76,7-95,0 90,01	65,6-85,7 79,05	22,9-35,5 29,63	7,3-11,6	8,2-13,2	9,6-13,4	9,2-11,5	8,6-10,6	7,9-10,8	7,8-9,8	7,3-9,1 8,35	12,4-16,0 14,07	50-70° 59°20'
2	6 "	109,0-118,0 113,50	230,0-253,0 241,50	98,7-110,0 104,35	86,0-89,1 87,55	26,0-28,6 27,30	12,6	12,6	12,5	12,1	11,0	-	10,10	8,1-10,7 9,40	10,8-12,5 11,65	50-60° 55°
4	7 "	110,0-130,0 120,25	203,0-248,0 228,25	80,0-95,0 90,88	71,5-81,6 76,98	24,6-36,6 28,88	10,1-10,8	8,5-15,2	10,3-13,3	9,8-12,3	9,8-11,5	-	9,6-10,2	9,0-10,6 9,53	7,2-15,0 10,93	55-58° 57°15'
1	8 "	107,0	232,0	89,0	74,4	29,2	13,9	9,5	13,8	11,8	10,8	11,4	10,1	9,6	14,0	70°
6	9 "	110,0-133,0 123,50	225,0-263,0 243,17	93,6-106,5 98,98	81,4-94,4 86,07	27,6-40,0 35,05	9,1-13,6	11,0-13,3	10,9-14,9	8,8-14,5	11,5-12,4	12,3-12,6	8,5-11,4	8,4-12,6 10,82	9,0-14,0 11,58	42-60° 53°30'
2	10 "	128,0-135,0 131,50	250,0-310,0 280,00	90,9-139,0 118,95	85,5-123,5 104,50	33,8-43,5 38,65	10,2-11,8	10,7-12,7	11,8-11,9	9,8-12,3	-	-	10,5-11,1	9,8-11,1 10,45	11,2-16,0 13,60	50-67° 58°30'
1	12 "	135,0	291,0	120,0	97,0	45,0	13,5	-	13,5	-	-	-	-	13,2	-	60°
1	13 "	156,0	311,0	124,4	109,5	42,5	13,8	16,5	15,6	14,8	13,7	14,7	13,2	12,3	28,5	60°
1	14 "	160,0	316,0	119,3	101,6	41,0	12,6	12,4	13,2	13,0	13,0	-	11,3	11,3	14,1	58°
5	15 "	154,0-168,0 160,80	277,0-327,0 305,40	107,0-138,0 123,26	102,0-114,3 106,12	35,3-42,9 39,46	8,7-16,9	13,8-18,1	12,5-15,9	11,6-15,0	11,7-13,8	12,4	11,0-13,0	11,5-14,1 12,64	12,2-23,0 16,86	54-60° 58°12'
7	16 "	140,0-190,0 163,71	302,0-367,0 331,71	119,8-149,8 135,34	100,4-135,0 117,50	38,2-49,9 44,67	10,9-16,8	13,5-18,2	14,3-18,4	12,4-15,1	13,5-15,5	13,4-13,5	11,9-13,9	11,3-13,9 12,56	15,0-28,0 19,24	40-70° 62°26'
1	17 "	167,0	317,0	138,0	122,0	40,9	13,0	17,5	14,6	-	-	-	-	12,9	20,0	60°
4	18 "	157,0-170,0 164,75	338,0-355,0 343,25	125,0-146,2 135,25	114,7-130,5 121,03	36,8-70,7 55,38	12,9-15,6	14,1-17,0	11,3-14,6	12,0-13,8	11,9-14,5	12,3-14,0	11,5-13,0	12,4-13,3 12,68	12,5-25,5 20,65	46-60° 51°
3	19 "	165,0-175,0 170,30	323,0-350,0 336,00	130,1-141,4 135,17	115,3-127,3 120,53	31,5-52,2 38,90	11,4-13,0	16,3-17,7	13,3-16,2	12,9-13,8	12,3-14,1	12,1	13,1-14,6	12,9-15,4 13,90	13,5-22,6 18,87	55-60° 57°40'
11	20-29"	143,0-179,0 165,00	288,0-380,0 338,50	108,0-154,0 129,40	89,4-131,0 113,30	30,8-62,0 43,00	12,9-14,6	12,5-19,5	13,0-20,4	16,0	16,4	15,7	13,0-14,7	12,3-18,5 15,56	11,0-20,0 14,32	45-71° 56°50'
10	30-39"	153,0-181,0 163,30	293,0-361,0 331,50	117,0-146,0 130,50	91,0-122,0 107,40	35,0-53,0 41,90	12,0-14,5	15,5-22,0	16,2-21,5	18,8-20,2	-	-	19,8	16,0-20,0 17,86	10,5-14,9 13,15	40-70° 53°40'
11	40-49"	159,0-175,0 166,20	322,0-355,0 335,60	110,0-159,0 132,70	98,2-145,0 118,82	31,0-46,0 41,00	17,8	24,0	12,5-21,8	21,0	-	-	21,5	18,0-22,9 19,91	10,0-16,0 13,67	40-80° 58°16'
11	50-59"	155,0-173,0 164,00	294,0-358,0 326,88	103,0-137,0 121,40	85,0-121,0 102,80	35,0-60,0 44,80	-	-	22,8	28,0	-	-	-	17,5-24,0 21,46	7,0-15,5 11,04	30-75° 50°49'
11	60-69"	157,0-175,0 163,73	323,0-378,0 344,50	107,0-147,0 124,50	92,0-118,0 106,30	28,4-49,0 44,38	-	-	22,8	24,0	-	21,0	19,0	18,8-24,0 20,93	0-14,5 11,33	/27/ /100/ 40-65° 58°43'
6	70 " and over	156,0-165,0 160,30	310,0-358,0 334,50	118,0-162,0 129,80	98,0-126,0 108,70	35,0-88,3 49,40	-	-	27,2	-	-	-	-	19,9-25,0 22,72	15,5-18,0 16,25	/20/ 55-85° 60°40'

Tab.2 Per cent ratios of the segments of the aorta to the length of the descending aorta ♂

No of cases	Age	Aorta length to size range	Aorta length to size aver.	Length of the segment aorta end – coeliac a. to length of descending aorta range	aver.	aorta end – sup.mes.a. range	aver.	aorta end – inf.mes.a. range	aver.	Aorta diameter above division range	aver.
	a	48,81–57,22	53,64								
3	foe- tuses I			30,89–35,79	34,12	25,69–28,88	27,24	8,26–12,62	10,05	5,20–7,04	6,43
	b	21,53–25,75	23,51								
	a	44,60–51,42	46,18								
7	" II			32,90–41,35	37,55	28,04–36,14	31,84	7,55–13,05	10,50	4,98–9,62	8,43
	b	17,63–22,85	19,51								
11	0–1 day /premat./	16,20–25,12	21,43	32,34–46,15	37,52	27,77–38,46	32,02	8,30–30,12	12,59	5,21–6,63	5,67
12	0–2 days	19,48–21,73	20,71	32,50–41,09	35,81	26,40–34,34	30,08	8,22–13,54	10,79	4,91–6,86	6,09
10	7–12 "	20,95–26,23	22,65	29,81–46,30	36,39	24,11–37,96	30,64	7,10–18,89	10,57	4,57–6,67	5,44
11	13–29 "	18,16–24,42	22,18	32,92–51,98	38,56	27,59–33,91	31,12	5,89–16,81	11,91	4,60–6,31	5,46
6	1 month	20,18–23,06	21,52	32,23–38,37	35,70	28,77–32,07	30,21	9,73–13,83	11,59	3,81–5,62	5,10
10	2 months	20,73–25,64	22,60	28,70–38,37	35,15	25,83–32,43	30,02	7,59–12,48	10,07	4,07–5,55	4,82
5	3 "	19,31–22,33	21,11	35,82–36,22	36,03	29,15–33,08	30,93	7,69–13,78	11,06	4,41–5,61	5,21
6	4 "	21,82–22,78	22,32	32,41–42,79	38,51	26,19–35,40	31,79	9,51–20,40	12,88	4,10–5,07	4,59
8	5 "	19,18–24,13	21,45	34,98–38,55	36,23	29,52–33,06	30,97	9,22–17,11	11,88	4,28–5,38	4,78
9	6 "	19,80–24,31	21,87	32,16–43,15	38,33	27,50–33,31	33,00	6,92–15,40	11,19	3,93–5,56	4,79
5	7 "	19,39–24,44	21,36	36,10–40,50	37,31	30,35–34,91	31,70	7,26–13,86	11,17	4,14–4,68	4,39
3	8 "	21,25–21,67	21,43	37,07–37,58	37,27	31,92–32,55	32,33	10,82–13,66	12,50	4,49–5,10	4,69
1	9 "	22,72		37,06		32,12		10,77		4,28	
4	10 "	19,60–24,20	22,21	32,81–39,76	36,08	29,74–35,03	31,95	4,87–11,04	7,14	3,53–5,13	4,25
1	11 "	23,88		34,69		29,75		10,31		4,44	
9	1 year	19,20–24,35	21,19	35,61–42,67	39,20	30,46–38,68	34,44	9,42–14,63	11,92	4,07–5,10	4,49
6	2 years	20,25–24,87	22,10	33,25–48,61	39,15	29,70–36,65	33,06	9,04–12,76	11,13	3,87–4,74	4,31
2	3 "	18,32–19,06	18,70	41,82–41,95	41,88	34,20–35,84	35,06	10,18–12,13	11,11	4,08–4,26	4,17
6	4 "	17,58–21,57	18,81	36,39–39,68	37,62	30,77–35,30	32,47	9,47–17,24	11,42	3,64–4,74	4,44
6	5 "	18,42–20,35	19,60	40,71–45,12	42,50	35,01–41,00	37,41	12,01–16,90	13,82	3,66–4,33	3,92
2	6 "	21,10–21,44	21,27	39,01–47,83	43,42	35,22–37,39	36,31	11,30	11,30	3,52–4,23	3,88
4	7 "	18,45–19,91	18,99	38,19–42,99	39,88	32,38–35,22	33,79	10,21–16,56	12,74	3,78–4,43	4,18
1	8 "	21,68		38,36		32,07		12,59		4,14	
6	9 "	17,31–21,92	19,74	37,25–44,00	40,81	32,39–37,51	35,48	10,82–17,29	14,51	3,73–5,09	4,44
2	10 "	19,53–22,96	21,25	39,56–44,84	42,20	34,20–39,84	37,02	13,52–14,03	13,78	3,58–3,92	3,75
1	12 "	21,56		41,24		33,33		15,46		4,54	
1	13 "	19,94		40,00		35,21		13,67		3,95	
1	14 "	19,75		37,75		32,15		12,97		3,53	
5	15 "	17,99–19,94	18,99	35,08–44,69	40,36	33,64–36,82	34,75	10,80–14,48	12,92	3,77–4,50	4,14
7	16 "	18,89–21,66	20,26	38,70–42,44	40,80	33,25–37,82	35,42	11,90–16,00	13,47	3,59–4,10	3,79
1	17 "	18,98		43,53		38,49		12,90		4,07	
4	18 "	20,00–21,78	20,86	35,21–43,00	39,45	32,31–38,38	35,29	10,37–20,92	16,21	3,55–3,91	3,70
3	19 "	19,14–20,47	19,73	37,17–42,21	40,23	32,94–38,00	35,87	9,43–15,58	11,58	3,68–4,77	4,14
11	20–29"	19,26–22,24	20,67	30,34–43,32	38,24	25,25–38,87	33,46	8,94–18,24	12,71	3,73–5,44	4,60
10	30–39"	17,90–23,23	20,30	35,16–43,32	39,37	28,33–35,78	32,40	9,70–18,09	12,65	4,56–6,29	5,39
11	40–49"	18,72–22,19	20,09	33,14–49,38	39,54	30,31–45,03	35,55	9,23–13,90	12,32	5,14–6,82	6,00
11	50–59"	18,15–21,81	19,93	33,52–42,48	37,15	27,09–37,46	31,44	9,78–18,58	13,71	5,38–7,72	6,57
11	60–69"	19,26–22,77	21,06	31,75–42,36	36,18	27,30–35,44	30,83	8,12–21,27	12,27	5,65–6,61	6,04
6	70 " and over	19,38–21,83	20,87	36,19–45,25	38,30	28,90–36,42	32,50	10,12–26,56	14,77	5,94–7,53	6,79

Tab.2 Per cent ratios of the segments of the aorta to the length of the descending aorta ♀

No of cases	Age	Aorta length to size range	Aorta length to size aver.	Length of the segment aorta end – coeliac a. to length of descending aorta range	aver.	aorta end – sup.mes.a. range	aver.	aorta end – inf.mes.a. range	aver.	Aorta diameter above division range	aver.
	a	53,14									
1	foe- tuses I			34,14		29,04		12,37		5,38	
	b	20,67									
	a	35,54–54,61	43,75								
7	" II			34,60–46,04	37,95	30,32–36,11	32,88	10,19–23,53	12,19	4,76–6,90	5,60
	b	15,50–23,70	19,18								
10	0–2 days /premat./	19,27–26,36	21,50	29,57–41,51	36,78	23,98–37,97	31,17	8,86–17,95	11,74	5,47–6,74	6,05
12	0–3 days	19,11–22,53	21,14	33,31–42,22	38,17	28,15–36,86	32,96	8,14–17,47	12,11	5,59–6,76	6,02
10	4–13 "	19,79–23,92	22,44	30,65–40,90	36,39	25,61–36,22	30,95	4,21–13,60	10,28	5,32–8,04	5,99
11	15–30 "	20,53–25,62	22,13	32,14–41,82	36,31	28,04–36,99	31,40	6,89–24,62	11,33	5,19–6,30	5,76
5	1 month	19,20–23,49	21,89	33,98–37,51	36,09	25,22–32,69	29,35	8,19–12,86	10,14	4,35–5,78	5,25
10	2 months	20,25–23,70	21,81	31,38–39,84	36,85	26,33–34,95	31,32	8,33–14,78	10,21	4,37–5,91	5,01
5	3 "	19,76–23,86	21,61	31,25–39,85	35,84	28,53–33,76	31,36	7,16–13,48	10,15	4,41–5,41	4,82
5	4 "	20,80–21,52	21,21	33,02–41,19	37,21	28,64–34,89	32,39	9,86–13,40	11,42	4,37–5,95	4,87
2	5 "	20,25–21,38	20,81	34,92–36,79	35,85	28,97–32,18	30,59	8,87–13,25	11,04	4,69–5,24	4,97
3	6 "	20,05–24,69	22,07	36,67–40,00	38,85	30,84–32,28	31,79	8,54–13,15	10,08	3,48–5,05	4,40
1	7 "	22,58		36,83		30,63		10,77		4,06	
4	8 "	19,44–22,94	21,86	36,79–40,59	38,78	31,92–32,97	32,42	11,38–14,63	13,11	4,04–4,42	4,18
4	9 "	21,46–25,76	23,48	29,21–39,55	35,30	25,00–35,21	30,17	9,79–12,75	10,83	4,40–5,00	4,64
3	10 "	21,25–24,74	22,53	32,77–39,93	37,07	27,30–33,59	30,02	5,39–10,33	8,35	4,18–4,96	4,67
1	11 "	21,85		40,02		32,89		11,53		4,27	
8	1 year	19,47–23,50	21,08	33,80–42,79	38,31	28,14–36,97	31,84	7,97–15,76	10,92	3,40–4,84	4,23
6	2 years	19,26–22,44	20,74	33,91–42,35	38,61	28,17–36,87	33,01	8,44–14,71	11,34	3,71–4,65	4,18
2	4 "	20,73–21,62	21,21	38,86–40,62	39,83	34,58–35,07	34,80	10,35–14,45	12,61	3,85–3,96	3,91
2	5 "	20,20–20,30	20,25	36,89–38,82	37,85	31,65–32,27	31,96	8,87–10,53	9,71	4,17–4,33	4,25
2	7 "	19,18–20,29	19,72	37,25–41,31	39,29	30,81–36,81	33,82	10,33–12,91	11,63	3,90–4,27	4,08
2	8 "	18,75–19,92	19,57	39,20–40,03	39,65	34,09–34,67	34,40	11,87–13,07	12,51	3,66–4,40	4,00
6	9 "	18,74–30,25	22,31	26,83–45,33	38,20	22,94–39,19	33,09	9,03–16,79	12,99	2,78–4,36	3,71
2	12 "	19,47–20,28	19,89	40,78–42,64	41,76	37,12–37,36	37,25	12,85–14,55	13,65	3,40–3,97	3,67
4	15 "	19,76–21,27	20,62	40,03–41,77	40,99	35,33–36,49	35,77	11,21–14,55	12,43	3,54–4,18	3,78
1	16 "	21,17		43,15		38,23		12,54		3,67	
1	17 "	22,27		41,60		31,96		11,71		4,27	
4	18 "	20,33–21,34	20,90	35,74–40,92	39,40	31,74–36,62	34,42	10,29–14,43	11,59	3,20–4,09	3,71
1	19 "	22,36		41,54		33,35		9,70		4,53	
10	20–29 "	15,46–21,42	19,79	33,55–51,91	40,16	29,19–47,66	35,38	9,01–19,87	11,84	3,97–5,97	4,71
10	30–39 "	17,20–22,04	19,98	33,57–43,33	38,66	29,24–36,76	33,29	8,74–14,15	12,20	4,26–6,14	4,85
10	40–49 "	19,49–22,36	21,18	28,68–43,59	37,60	25,44–38,46	33,32	7,65–16,21	12,72	4,48–6,06	5,25
10	50–59 "	18,08–22,50	21,04	33,83–45,05	40,07	30,53–39,01	35,27	9,08–17,72	13,07	4,65–6,55	5,72
10	60–69 "	19,10–24,64	21,54	35,53–42,16	39,00	30,59–38,12	34,39	10,35–16,45	13,32	5,13–8,54	6,18
5	70 " and over	15,69–22,77	19,92	37,24–43,43	40,24	30,53–37,23	33,54	11,37–19,83	15,06	5,30–7,38	6,41

Tab.3 Per cent ratios between the segments of the abdominal aorta x/ ♀

No of cases	Age	Length of the segment aorta end – sup.mes.artery to the length of segm. aorta end – inf.mes.artery range	aver.	Aorta diameter above division range	aver.	Length of aorta end – inf.mes.a. to length of aorta range	aver.	Aorta diameter above division end – sup.mes.a. range	aver.	Aorta diameter to length aorta end – inf.mes.a. range	aver.
1	foe- tuses I	87,40		36,22		15,75		41,44		18,02		43,48	
7	" II	78,41–92,99	86,64	25,40–36,26	32,12	13,55–16,80	14,81	30,19–42,13	37,07	14,57–19,18	16,09	42,03–56,25	46,09
10	0–2 days /premat./	61,94–92,13	83,64	25,87–43,24	31,51	13,82–22,10	16,26	31,78–48,88	37,68	15,11–25,11	19,41	31,97–75,61	51,51
12	0–3 days	82,86–90,09	86,24	24,43–41,41	31,72	13,46–20,00	15,78	28,66–47,39	36,78	15,40–24,01	18,30	32,50–68,75	49,75
10	4–13 "	79,57–91,10	85,84	22,58–33,64 /13,72/	28,25 /27,01/	13,15–18,41 /26,22/	16,47	28,38–38,10 /16,42/	33,22 /31,77/	14,68–20,55 /31,39/	19,36	39,09–66,67 /191,11	58,29 52,23/
11	15–30 "	75,51–91,26	86,77	16,86–66,44	31,20	14,01–18,09	15,85	18,64–76,19	36,08	15,49–20,75	18,33	24,48–83,10	50,81
5	1 month	66,26–87,14	81,33	21,98–34,29	28,09	12,71–16,09	14,56	26,02–39,77	34,54	14,99–22,93	17,90	37,68–63,73	51,83
10	2 months	81,71–94,89	84,99	23,02–40,15	27,71	10,98–16,67	13,59	27,89–42,31	32,60	13,33–19,87	15,99	39,72–62,77	49,03
5	3 "	83,11–94,59	87,49	21,11–35,06	28,33	11,51–17,03	13,45	25,08–40,50	32,38	13,59–18,96	15,37	35,19–75,61	47,47
5	4 "	84,71–89,92	87,07	24,82–36,27	30,68	10,61–16,12	13,10	29,30–40,34	35,23	12,53–17,93	15,04	39,39–47,01	42,70
8	5 "	78,75–92,15	85,34	25,40–36,02	30,80	12,75–15,01	13,86	27,57–45,74	36,09	16,19–16,29	16,25	35,40–59,09	45,02
4	6 "	80,70–87,27	83,15	21,36–35,35	28,23	8,70–13,76	11,72	26,47–40,85	33,95	10,78–16,37	14,10	36,57–54,24	41,55
1	7 "	83,17		29,26		11,02		35,18		13,23		37,67	
4	8 "	78,38–86,76	83,61	28,81–37,63	33,80	10,14–11,19	10,78	34,51–45,12	40,43	12,65–13,41	12,90	28,14–38,85	31,90
4	9 "	82,34–89,01	85,48	27,41–36,04	30,67	11,29–14,00	12,41	32,70–42,11	35,88	12,87–16,90	14,52	35,53–51,08	42,47
3	10 "	75,50–84,12	80,99	16,45–25,86	22,53	10,46–15,15	12,59	19,74–31,72	27,82	12,45–18,18	15,55	40,51–92,11	55,89
1	11 "	82,16		28,81		10,67		35,06		12,99		37,04	
8	1 year	75,57–87,00	83,10	20,71–36,83	28,50	8,96–12,59	11,04	23,81–42,62	34,30	10,98–15,52	13,29	26,92–51,72	38,73
6	2 years	83,97–90,19	85,50	20,63–34,72	29,36	10,10–11,77	10,83	22,88–40,77	34,34	11,20–13,72	12,67	31,60–48,95	36,90
2	4 "	85,14–90,24	87,37	26,64–35,57	31,67	9,76–9,90	9,82	29,52–41,73	36,24	10,97–11,46	11,24	27,44–37,17	31,02
2	5 "	83,12–85,79	84,43	22,84–28,55	25,65	11,17–11,32	11,24	27,48–33,28	30,37	13,19–13,44	13,31	39,63–48,89	43,83
2	7 "	82,70–89,09	86,07	27,74–31,25	29,59	9,43–11,45	10,38	33,54–35,08	34,38	10,59–13,35	12,06	30,18–41,28	35,69
2	8 "	86,59–86,96	86,76	30,27–32,65	31,55	9,14–11,22	10,10	34,61–37,71	36,37	10,55–12,91	11,64	27,98–37,08	32,01
6	9 "	83,05–90,21	86,64	31,45–37,04	34,02	7,26–10,80	9,70	35,31–42,34	39,26	8,40–12,11	11,20	19,61–34,10	28,52
2	12 "	87,62–91,03	89,19	30,13–35,69	32,69	7,98–9,73	8,79	34,39–39,20	36,65	9,11–10,69	9,85	26,49–27,27	26,88
4	15 "	85,92–88,31	87,28	26,83–36,13	30,33	8,83–10,00	9,22	31,08–41,19	34,75	10,00–11,45	10,57	25,31–36,83	30,40
1	16 "	88,58		29,05		8,51		32,80		9,61		29,30	
1	17 "	76,82		28,15		10,26		36,64		13,36		36,47	
4	18 "	83,69–89,47	87,37	25,53–40,37	29,42	7,94–11,01	9,41	29,29–45,45	33,68	9,49–12,40	10,77	27,27–39,34	31,98
1	19 "	80,29		23,35		10,91		29,08		13,59		46,73	
10	20–29"	83,57–91,80	88,11	25,20–38,28	29,48	9,26–13,93	11,73	28,64–41,70	33,46	10,09–15,81	13,31	24,20–50,75	39,79
10	30–39"	82,79–88,98	86,10	23,46–39,76	31,55	10,09–18,28	12,54	27,40–45,68	36,64	11,89–20,99	14,56	30,89–48,77	39,74
10	40–49"	83,61–97,32	88,69	21,57–49,47	33,85	11,37–17,74	14,00	24,44–57,32	38,16	12,89–20,00	15,78	30,85–66,54	41,35
10	50–59"	81,56–95,52	88,02	24,15–44,57	32,61	11,48–16,79	14,27	26,39–52,56	37,05	12,81–18,63	16,21	31,06–69,53	43,75
10	60–69"	77,67–94,20	83,44	24,57–43,52	34,12	12,68–22,94	15,82	27,15–50,54	38,58	13,46–27,21	17,38	37,23–57,07	46,35
5	70 " and over	76,24–91,06	83,36	28,97–46,53	37,42	13,49–17,33	15,93	36,67–61,04	44,89	17,35–22,73	19,11	37,23–52,14	42,57

x/ Average values based on sizes of the whole group.

Tab.3 Per cent ratios between the segments of the abdominal aorta x/ ♂

No of cases	Age	Length of the segment aorta end – sup.mes.artery to the length of segm. aorta end – inf.mes.artery range	aver.	Aorta diameter above division range	aver.	Length of aorta end – inf.mes.a. to length of aorta range	aver.	Aorta diameter above division end – sup.mes.a. range	aver.	Aorta diameter to length of aorta end – inf.mes.a. range	aver.
3	foe- tuses I	74,81–83,17	79,84	24,43–35,86	29,44	16,83–20,00	18,83	32,14–43,70	36,88	20,24–25,51	23,59	55,77–78,13	63,96
7	" II	39,92–87,88	84,79	20,49–33,99	27,98	12,12–23,26	15,71	23,60–39,88	32,99	13,79–26,88	18,52	47,50–76,19	56,14
11	0–1 day /premat./	74,59–90,96	85,35	22,70–39,08 /70,42	33,56 30,54/	12,97–17,32	15,27	25,24–46,90 /80,65	39,31 35,85/	16,84–21,02	17,92	36,76–67,09	50,00
12	0–2 days	79,38–90,23	83,99	25,30–35,58	30,52	13,64–19,83	17,10	30,37–40,37	36,33	16,56–23,81	20,36	45,10–76,47	56,40
10	4–13 "	80,88–88,74	84,06	19,56–40,80	29,11	12,21–19,44	14,77	24,18–49,76	34,51	13,76–24,03	17,76	31,37–62,50	51,46
11	14–29 "	80,00–92,25	86,71	17,03–37,53	30,90	8,85–18,29	14,17	20,33–58,46	38,23	14,32–22,86	17,56	30,00–65,69	45,86
6	1 month	78,01–93,41	84,60	25,83–36,78	32,45	11,30–15,68	14,29	32,35–45,61	38,36	12,91–19,55	16,89	32,77–55,45	44,03
10	2 months	79,95–90,00	85,34	22,22–35,02	28,57	10,62–19,03	13,66	26,09–43,80	33,48	12,57–21,15	16,01	32,65–66,67	47,81
5	3 "	81,36–91,31	85,79	21,28–38,03	30,38	12,30–15,49	14,44	25,25–41,65	35,42	14,07–18,99	16,83	40,74–68,93	47,53
6	4 "	77,70–85,45	82,55	27,34–30,91	33,43	9,88–13,18	11,92	33,05–39,45	40,50	11,94–15,64	14,44	24,71–43,08	35,67
8	5 "	81,60–89,70	85,47	25,72–47,71	32,78	11,93–14,38	13,08	31,03–56,52	38,35	14,13–17,12	15,30	25,00–54,31	39,89
9	6 "	78,25–90,55	86,07	19,78–36,61	29,18	9,91–15,13	12,49	23,11–40,68	33,91	11,16–17,69	14,51	32,79–72,33	42,80
5	7 "	80,98–86,02	83,84	19,89–37,16	29,53	10,57–12,97	11,62	23,66–44,23	35,23	12,29–15,42	13,85	30,92–62,73	39,33
3	8 "	85,86–87,71	86,73	29,18–36,35	33,54	12,07–13,57	12,58	33,27–41,97	38,68	13,81–15,66	14,50	34,31–41,52	36,11
1	9 "	86,68		29,05		11,56		33,52		13,33		39,78	
4	10 "	86,35–90,64	88,50	14,84–30,36	19,89	8,89–14,11	11,69	16,37–34,00	22,48	10,09–15,80	13,21	46,47–80,00	58,76
1	11 "	85,77		29,73		12,79		34,66		14,92		43,03	
9	1 year	78,75–92,96	87,87	23,64–38,10	30,40	10,55–13,57	11,47	27,08–42,25	34,60	11,53–16,74	13,18	30,00–51,28	37,70
6	2 years	75,40–89,31	84,44	20,89–32,67	28,43	8,70–12,67	11,01	27,71–38,69	33,66	11,53–14,19	13,03	30,30–46,63	38,72
2	3 "	81,51–85,71	83,71	24,35–28,90	26,51	9,73–10,19	10,10	28,41–35,46	31,67	11,88–11,93	11,91	33,65–41,84	37,59
6	4 "	84,03–89,68	86,31	25,00–47,24	30,35	9,16–12,91	11,80	28,28–54,95	35,16	10,28–15,28	13,67	27,13–50,00	38,87
6	5 "	85,39–90,88	87,74	26,62–37,93	32,89	8,70–9,72	9,27	29,29–42,41	37,49	9,57–11,13	10,56	25,63–32,67	28,18
2	6 "	78,18–90,27	83,90	23,64–28,98	26,16	7,36–10,84	9,01	30,23–32,10	31,18	9,42–12,01	10,74	31,15–37,41	34,43
4	7 "	78,42–89,37	84,70	26,23–38,53	31,77	9,70–11,25	10,48	30,15–49,13	37,51	11,15–13,20	12,37	25,68–36,99	32,99
1	8 "	83,60		32,81		10,79		39,25		12,90		32,88	
6	9 "	85,25–88,64	86,95	29,05–40,49	35,41	8,97–13,26	10,93	13,41–46,56	40,72	10,32–15,25	12,57	22,16–45,65	30,86
2	10 "	86,45–88,85	87,85	31,29–34,18	32,49	7,99–9,91	8,79	35,22–39,53	36,99	8,99–11,46	10,00	25,52–28,99	27,04
1	12 "	80,83		37,50		11,00		46,39		13,61		29,33	
1	13 "	88,02		34,16		9,89		38,81		11,23		28,94	
1	14 "	85,16		34,37		9,47		40,35		11,12		27,56	
5	15 "	82,39–96,92	86,09	25,58–39,25	32,01	9,24–12,06	10,25	30,38–40,74	37,18	10,92–13,39	11,91	26,81–38,11	32,03
7	16 "	80,32–91,20	86,81	29,16–40,73	33,01	8,63–10,43	9,19	31,48–46,17	38,02	9,63–11,83	10,69	25,61–30,59	28,11
1	17 "	88,41		29,64		9,35		33,52		10,57		31,54	
4	18 "	87,40–91,76	89,48	29,44–54,34	40,94	8,88–10,08	9,37	32,08–60,53	45,76	10,16–10,99	10,47	17,54–34,24	22,89
3	19 "	88,62–90,03	89,17	23,51–36,92	28,78	9,48–11,49	10,28	26,47–41,01	32,27	10,53–12,94	11,53	25,67–48,89	35,73
11	20–29"	80,52–92,06	87,51	25,41–43,36	33,24	10,00–14,73	12,03	27,78–43,95	37,90	11,39–17,70	13,74	27,03–50,00	36,18
10	30–39"	70,34–90,37	82,32	24,14–44,92	32,14	11,31–16,07	13,69	30,17–52,48	39,04	15,08–20,66	16,62	30,57–57,14	42,58
11	40–49"	81,16–93,33	88,41	22,46–36,51	30,92	12,70–17,27	15,06	27,68–42,99	34,67	13,93–20,45	16,99	40,87–57,94	48,70
11	50–59"	80,83–91,20	84,54	27,73–43,80	36,80	12,88–22,04	17,75	33,49–51,76	43,59	15,74–26,71	20,89	37,78–68,57	47,92
11	60–69"	82,54–92,19	85,33	23,47–39,13	34,03	13,47–20,00	15,28	28,12–46,39	39,88	16,35–23,26	17,90	26,75–77,46	44,89
6	70 " and over	77,78–87,14	83,70	29,41–34,78 /60,07	32,53 38,04/	14,21–20,84	17,50	35,00–44,44 /72,38	39,25 45,44/	16,31–24,80	20,90	41,25–70,86 /22,54/	46,00

x/ Average values based on sizes of the whole group.

Tab.4 The course of the abdominal aorta in relation to the median line of the body

Age	No of cases ♂	Slightly to the right	In median line	Inter-mediate	Close to the median line	Inter-mediate	On the left	No of cases ♀	Slightly to the right	In median line	Inter-mediate	Close to the median line	Inter-mediate	On the left
foe-tuses I	3	-	-	2	1	-	-	1	-	-	1	-	-	-
" II	7	1	2	-	3	1	-	7	1	1	4	1	-	-
0-3 days /premat./	10 /11/	1	6	3	-	-	-	10	-	3	4	3	-	-
0-3 days	11/12/	-	5	3	3	-	-	12	-	2	6	4	-	-
4-13 "	10	-	4	3	3	-	-	10	-	4	3	3	-	-
14-30 "	11	1	8	2	-	-	-	11	-	6	3	2	-	-
1 month	6	-	3	1	2	-	-	5	1	3	1	-	-	-
2 months	10	-	6	3	1	-	-	10	-	3	5	1	1	-
3 "	5	-	1	3	1	-	-	5	-	2	2	1	-	-
4 "	6	-	3	3	-	-	-	5	-	1	2	2	-	-
5 "	8	-	5	1	2	-	-	2	-	2	-	-	-	-
6 "	9	-	3	3	3	-	-	4	-	1	2	1	-	-
7 "	5	-	2	1	2	-	-	1	-	1	-	-	-	-
8 "	3	-	-	2	1	-	-	4	-	3	-	1	-	-
9 "	1	-	1	-	-	-	-	4	-	2	1	1	-	-
10 "	4	-	1	1	2	-	-	3	1	-	1	-	-	1
11 "	1	-	1	-	-	-	-	1	-	1	-	-	-	-
1 year	9	1	4	1	3	-	-	8	1	3	2	2	-	-
2 years	6	-	3	1	2	-	-	6	-	2	1	3	-	-
3 "	2	-	-	2	-	-	-	-	-	-	-	-	-	-
4 "	6	-	1	1	4	-	-	2	-	1	1	-	-	-
5 "	6	-	2	4	-	-	-	2	-	2	-	-	-	-
6 "	2	-	1	-	1	-	-	-	-	-	-	-	-	-
7 "	4	-	-	4	-	-	-	2	-	-	-	2	-	-
8 "	1	1	-	-	-	-	-	2	-	-	1	1	-	-
9 "	6	-	1	3	2	-	-	6	-	2	2	2	-	-
10 "	2	-	2	-	-	-	-	-	-	-	-	-	-	-
11 "	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12 "	1	-	1	-	-	-	-	2	-	-	-	2	-	-
13 "	1	-	-	1	-	-	-	-	-	-	-	-	-	-
14 "	1	-	-	1	-	-	-	-	-	-	-	-	-	-
15 "	5	-	1	1	3	-	-	4	1	1	1	1	-	-
16 "	7	-	2	3	1	-	1	1	-	-	-	-	1	-
17 "	1	-	1	-	-	-	-	1	-	1	-	-	-	-
18 "	4	1	-	2	1	-	-	4	-	2	-	2	-	-
19 "	3	1	-	1	-	-	1	1	-	-	1	-	-	-
20-29"	12	1	4	4	2	-	1	10	-	3	3	2	2	-
30-39"	10	-	3	5	2	-	-	10	-	3	3	4	-	-
40-49"	11	-	5	2	4	-	-	10	-	2	5	3	-	-
50-59"	11	1	3	3	4	-	-	10	-	3	2	3	1	1
60-69"	10	1	3	1	4	-	1	10	1	2	3	2	-	1
70 and over	5	1	1	-	3	-	-	5	1	-	1	2	-	1

Tab.5 The beginning and end of the descending aorta in the projection on the vertebral column

♀

Vertebrae initial Th	final L	foetuses I	foetuses II	days 0-3 p	days 0-3 n	days 4-13	days 14-30	months 1	2	3	4	5	6	7	8	9	10	11	years 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-29	30-39	40-49	50-59	60-69	70-
II b	IV a			1																																							
II/III	III/IV			1		1	1																																				
	IV	1																																									
	IV b			1		1																																					
	V a		1																																								
III a	III/IV																		1																								
	IV a				1	1																																					
	IV		1						1				1																														
	IV b			1	1																																						
III	III									1																																	
	III/IV			1			1	1												1																1				1			
	IV a					1					2						1		1																								
	IV			1	1	1	1	1	2	1			1	1	1	1																											
	IV b		1			1	1		1		1				1		1		1														1									1	
	IV/V				1	1			1				1																						1						1		
III b	III		1																																								
	III/IV			1								1																															
	IV a			1	1				1							1																											
	IV				1															2																							
	IV b																1																										
	IV/V				1						1																																
III/IV	II/III							1																																			
	III b					1																																					
	III/IV				1		1	1	4	1		1	1						2																								
	IV a		1		1		1								1				1				1										1										
	IV						4	1		2	1				1	2			1				1							1										1			
	IV b		1		1															2													1							2			1
	IV/V																																						1				
	V			1																																							
IV a	III/IV																		1																								
	IV a																					1																					
	IV					1																								1						1					1	1	
	IV b				1																	1					1										1			1			
	IV/V						1																														1	1					
IV	III/IV																										1												1				
	IV a																										1												2				
	IV				1	1																			1	1	3						1					6	2	1	2	2	2
	IV b																								1	1										1		2	1		1	3	
	IV/V																																	1					1	2	2		1
	V																																								1		
IV b	IV a																																			1			1				
	IV																																						1				
	IV b																																				1						
IV/V	III		1																																								
	IV																			1																					1	1	
	IV/V																																						1			1	
V a	IV																																						1				
no marking	III																1																										
	IV				1																																						

a – upper part of vertebra p – premature newborn
b – lover " " " n – normal "

Tab.5 The beginning and end of the descending aorta in the projection on the vertebral column

♂

Vertebrae initial Th	final L	foetuses I	foetuses II	days 0-3 p	days 0-3 n	days 4-13	days 14-30	months 1	2	3	4	5	6	7	8	9	10	11	years 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-29	30-39	40-49	50-59	60-69	70-
II a	III/IV		1																																								
II	III/IV	2	1																																								
II b	III/IV			1																																							
	IV a	1																																									
	IV		1																																								
II/III	IV					1																																					
	IV/V			1																																							
III a	III a		1																																								
	IV		1	1													1																										
III	III/IV			1			1				1																																
	IV a		1	1		1		1	1			1	1																														
	IV			3	2		6		4	1	1		1						1	1			1																1			1	
	IV b					2			1						2																1												
	IV/V											1										1						1															
	V b																																								1		
III b	III/IV						1																																				
	IV a				2	1						1		2																													
	IV		1		1		1		1	1		1								1																							
	IV b			1								1									1																						
	IV/V					1	1													1																							
	V a												1																														
III/IV	III																																								1		
	III/IV				1	1		1				1										1																1					
	IV a				1			1		1				1					1						1																		
	IV				1	1			1	2	4		2	1	1		2		1	1		1					2											1	1		1	1	
	IV b				1				1				1	1				1	1	1					1							1										2	
	IV/V								1				1			1			1	1			1				1							2						1			
	V a																																										1
	V b																														1												
IV a	III/IV																1					1																					
	IV a				1																	1																					
	IV							1											1															1		1							
	IV b																						3	1		1																	
	IV/V																		1				1				1						1	2	1		1						
IV	III/IV																		1																				1		1		
	IV a							1											1									1									1			1	1		
	IV												1											1	1								1			1		2	4	5	1	1	1
	IV b							1				2															1						1	2			2	1	1	2	1	3	
	IV/V				1																						1											4		1	1	1	2
	V a																																		2								
	V																																								1		1
IV b	III/IV																					1																					
	IV a																									1							1										
	IV b																				1																						
	IV/V																																1										
IV/V	III b					1																																					
	III/IV																																								1		
	IV			1																																				1			
	IV b																																						1				
	IV/V																																						1				
V a	IV																																									1	
V	IV																																								1		
	IV b																																										1
	IV/V																																							1			
no	III					1																																					
mark-	IV												1																													1	
ing	V																																					1					

a – upper part of vertebra p – premature newborn
b – lover " " " n – normal "

Tab.6 The deviation of the aorta, the arisings of the coeliac and superior mesenteric arteries / the projection on the vertebral column/ ♂

Vertebrae		foetuses I	foetuses II	0-3 days p	0-3 days n	4-13 days	14-30 days	1 month	2 months	3 months	4 months	5 months	6 months	7 months	8 months	9 months	10 months	11 months	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20-29	30-39	40-49	50-59	60-69	70-
Deviation of the aorta																																										
	0	3	7				1																									1			2							
Th	V			1	2																																					
	V/VI			1	2																															1						
	VI				1	1	2		2																																		
	VI/VII			2						1		1																															
	VII			1	2	3	2	1		2	1		2						1						1							1			3			1	1			
	VII/VIII			1	1	2			1	1	2	2	1		1	1						2		1	1						1			2		1	1	1			
	VIII						3	3	3		1	1	2	1			1		2	1		1	2	1		1							1		1		1		2			2
	VIII/IX					1	1		1			1	2	1	2			1	2	3			1		1						1											1
	IX			1	1		1	1	2		1	3	2			1			2	1	1	1			1		1			2	1	1	2		3	1	3	3		
	IX/X			1						1									2	1	1	1	2			1		1		1	1			1		1	2	1		
	X			1	1	2	1		1			1		1			1					1		1	3	1	3	1		1				3		2	1	1	2	2	
	X/XI													1																			2		1		2			1		
	XI			1	1												1						1													2	4	1	2	1	
	XII																																					1	1			
Coeliac artery																																										
Th	IX/X					1																																			
	X																																					1			
	X/XI																																							1	
	XI	1								1	2	1																													
	XI b	1					1																																		
	XI/XII	1	1	2			1	1	1		1			1	1					1		1	1			1						1	1								
	XII a		3		1	1	1		2	2		2				2		2			2	1					1			1	1										
	XII		2	7	7	4	8	3	6	3	3	2	6	4	1	1	1	1	4	3	2	2	1		3		3	2			1	2	1	2		2		2	2			3
	XII b		1	1	2	1		1	1			2	1		1				3	2		1	3	1		2	2			1	1	1		1	2	5			1		1	
Th/L	XII/I				1	1		1					1				1							1	1						1	3		1	1	2		5	2	2	4	
L	I a																																1								1	
	I										1																1									2		2	4	3	3	
Superior mesenteric artery																																										
Th	XI/XII											1																														
	XII	3	1	2		1	2				2	1											1		1																	
	XII b		4				1	1	1	1		1	2	1	1		2		1	2	2	4	1						1													
Th/L	XII/I		2	6	3	4	2	3	4	2	2	2	6	2	1	1		1	5	3		2	2	1	2		3	2			3	3		1		3		2		1		
L	Ia			1	2									2	1					1			2			2				1		1	1	1	1			2			
	I					1		1	1			2							1													1	2	2	1				1	1	
	I b																									1				1												

a - upper part of vertebra
b - lover " " "
p - premature newborn
n - normal "

Tab.6 The deviation of the aorta, the arisings of the coeliac and superior mesenteric arteries /the projection on the vertebral column/ ♀

Vertebrae		foetuses I	foetuses II	0-3 days p	0-3 days n	4-13 days	14-30 days	1 month	2 months	3 months	4 months	5 months	6 months	7 months	8 months	9 months	10 months	11 months	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20-29	30-39	40-49	50-59	60-69	70-
Deviation of the aorta																																										
	0	1	7	1	3	1			1																																	
Th	V						1																																			
	V/VI			1			1																																		1		
	VI				1		2	2		1	1																																
	VI/VII					1																																				
	VII			5	4	4	3		3	2	1	1		1	1				1						1										1	1					
	VII/VIII						2	1							1	1																										1
	VIII			2	1	2			2	2	1		1		1	1			2	1										1											
	VIII/IX					1	2	1	2			1					2	1	1	2				1		1		1		1			1		1		1			2		1	
	IX				1						1		2		2				3	2		1				2		1		1		1	1		1	2			1	1	
	IX/X				1			1			1			1		1						1	1				1											3	2			1
	X							1				1							1						2	1					1		3		4	3	1	5	2	1	
	X/XI																		1				1														3	1	3		
	XI																															1				2	2	1	1	2		
	XI/XII																																							1		1
	XII								1																																	
Coeliac artery																																										
Th	XI							1																																		
	XI/XII		1	2	2	2	3	1	3	1	1			1	1				1							2		1		2											
	XII a		2		2	3	2		1	1	2	1		1	1	1			2	2		1			1	1		1		1						1					
	XII	1	3	5	4	4	3	3	6	3	1	1	4		2	2	1	1	5	2		1	1		2		2			1			2	1	4	3	3	5	2	
	XII b		1	1	3	1					1			1						1			1			1	1				1		1		1	1	2	1		
Th L	XII/I				1		3										1															1	1		2	1	4	4	3	1
L	I a																																				1					1
	I			2															1																	2	3			4	3
Superior mesenteric artery																																										
Th	XII			3	2		3	2	2	2	1	1			1		2	2							1															1	
	XII b		4		3	2	2		3	1	1	1			1	1	1		1	1					1		1		1												
Th/L	XII/I	1	2	2	1	3	2	2	3	2	2		3		3	1		1	5	1		1	1		1	1	4			3					3		4	2	1		
L	I a		1		1																					1					1	1	1		1						
	I			2	2	1	2		1			1			1							1	1										2		1				1		
	I b												1																								1					

a - upper part of vertebra
b - lover " " "
p - premature newborn
n - normal "