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The risk of stroke after chiropractic manipulation of the cervical spine

German-American Chiropractic Seminar 11-13.04.2008

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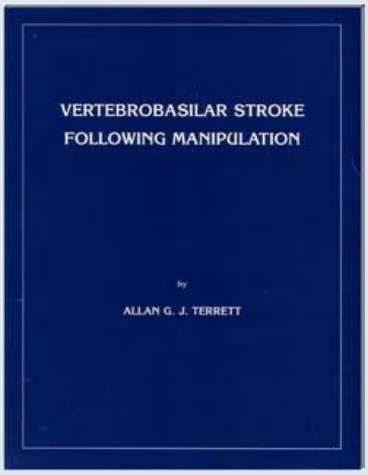
"Vertebrobasilar stroke after manipulation (of the cervical spine)".



West de Moines, Iowa 1996

193 documented cases in the period 1934 - 1995

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Risk with manipulations of the cervical spine

- Fatal incidents:

  < 1 : 10,000,000 (*Maigne 1972*)
  1 : 10,000,000 *(Cyriax 1978)*
  1 : 1,000,000 (*Hosek 1981*)
  2-3 : 1,000,000 (*Gutman 1983*)

- neurological incidents (*Dvorak/Orelli 1985*):

  Mild complications: 1 : 40,000
  Serious complications: 1 : 400,000

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Risk of stroke (USA)

- 194 per 100,000 adults
- 2.5per 100,000 children
- 3.4 per 100,000 migraine patients
- 0.25 per 100,000 patients
  After manipulations of the upper cervical spine

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Risk of stroke (USA)

< 45 years:
- Five times increased likelihood of having been in chiropractic care within the week of the VBA
- Five times the likelihood of having three or more Having had chiropractic treatments due to a cervical diagnosis

> 45 years: No significant correlations

(Rothwell / Bondy / Williams; Stroke. 2001 32)

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Complications in orthodox medicine

- 1.5 million hospital admissions annually due to iatrogenic reactions - including 100,000 deaths [USA].
- 1,000 deaths every week from and after unnecessary surgery (may-operations) [USA]
- 1,600 deaths annually in children due to allergic reactions to ASPIRIN [USA].
- Thousands of deaths annually from anaphylactic reactions to prescribed medicines [USA].

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Complications in orthodox medicine

- 250,000 serious side effects annually with drug treatment, approx. 25,000 deaths [Germany].
- Approximately 4.8 million anaesthetics result in the death of 20 patients per year, with the treating physicians speaking of a "safe discipline" [Germany].
- 522 deaths from VIAGRA by summer 2000; number of unreported cases: ten times as high [worldwide].
- The side effect rate of drugs containing ASA is 400 times higher and the risk of death 4,000 times higher than with chiropractic treatment!

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Risk for stroke

Risk of stroke
after chiropractic adjustment:

1:400.000!

with 100 treatments per week, the chiropractor
comes to about 200,000 treatments
in his working life

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Risk for stroke

If the chiropractic
treatment of the cervical spine
triggered a stroke, it would have
occurred sooner or later anyway
without the adjustment!

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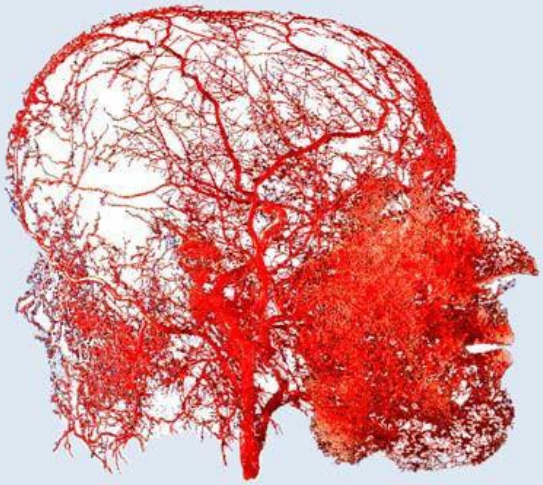
Blood supply to the brain and head



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Blood supply to the brain and head

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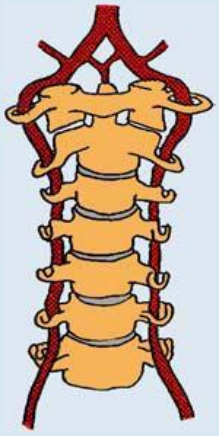
Course of the vertebral artery



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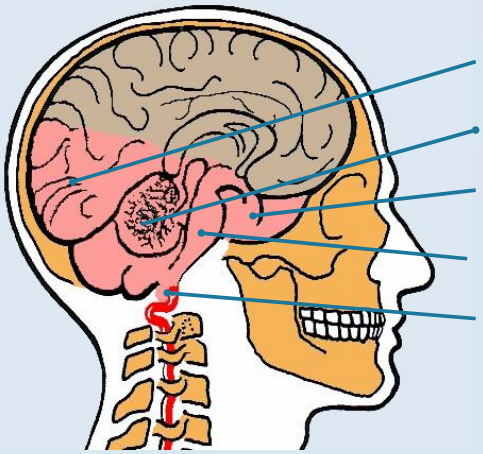
Supply area of the vertebral artery



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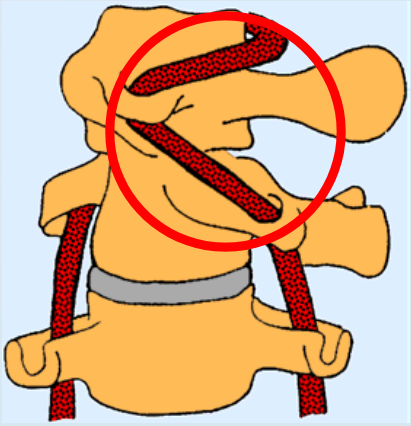
Injuries of the vertebral artery



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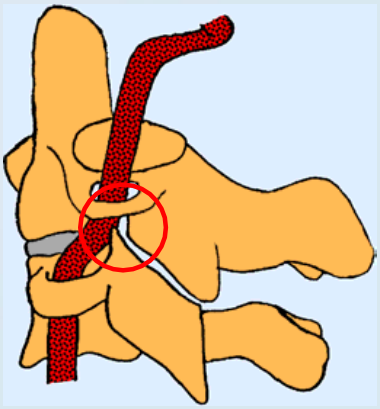
Injuries of the vertebral artery



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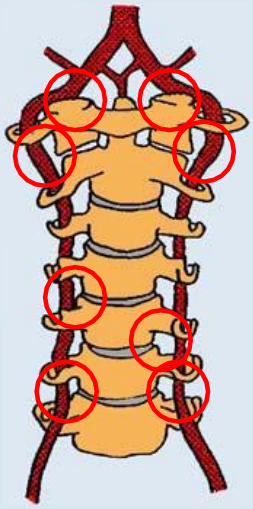
Injuries of the vertebral artery



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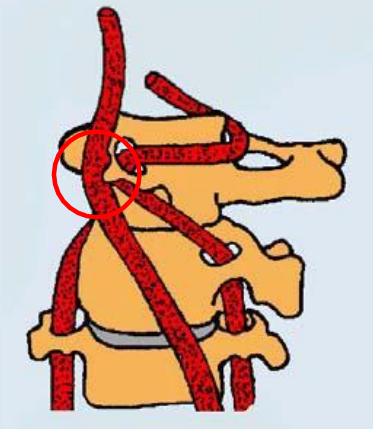
Injuries to the internal carotid artery



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Injuries to the arterial wall

Subintimal haematoma

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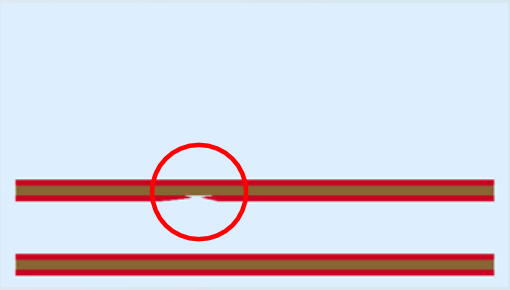
Injuries to the arterial wall

Rupture of the intima



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Injuries to the arterial wall

Rupture of the intima

Formation of a thrombus

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Injuries to the arterial wall

Rupture of the intima

Detachment of an embolus

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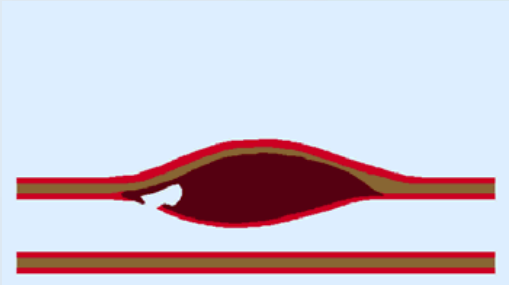
Injuries to the arterial wall

Subintimal haematoma with an aneurysm



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Injuries to the arterial wall

Breakthrough of an aneurysm through the intima

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Injuries to the arterial wall

Occlusion of the inferior posterior cerebellar artery due to the distal spread of an aneurysm

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Injuries to the arterial wall

perivascular haemorrhage

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Injuries to the arterial wall

Virchow Triad:

1. Changes in the vessel wall
2. Decrease in blood flow velocity
3. Increase in blood coagulability

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Sign of a vertebrobasilar ischaemia (VBI)

- Dizziness
- Loss of consciousness
- Double images
- Dysarthria
- Dysphagia
- Ataxia
- Nausea (possibly with vomiting)
- Nystagmus
- Numbness on one side of the face and/or body

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Occurrence of symptoms of VBI caused by manipulation of the cervical spine

- 69 % During treatment
- 3 % after a few minutes
- 9 % within one hour
- 8 % within 6 hours
- 5 % within 24 hours
- 6 % after more than 24 hours

- 47 % Neck pain/stiffness
- 20 % Neck pain/stiffness and headaches
- 16 % Headache
- 6 % Torticollis
- 2 % Lower back pain
- 2 % Abdominal discomfort
- 7 % (others)

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Complaints in a VBS after manipulation of the cervical spine

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Stroke after chiropractic treatment of the cervical spine

Alter	männlich		weiblich		unbekannt		gesamt	
	Fälle	tödlich	Fälle	tödlich	Fälle	tödlich	Fälle	tödlich
< 10	1						1	
11 – 20	1		1				2	
21 – 30	10	2	20	1			30	3
31 – 40	33	6	43	10	3		81	16
41 – 50	14	1	15	2	4		33	3
51 – 60	8	3	8	3			16	6
61 – 70	2		2				4	
(unbekannt)	5	1	6	2	5	2	16	5
gesamt	74	13	97	18	12	2	183	33

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Stroke after chiropractic treatment of the cervical spine

	komplette Erholung	fast komplette Erholung	nicht bekannt	neurologische Defizite	Locked-in-Syndrome mit Erholung	Locked-in-Syndrome / Tetra-plegie	Tod	gesamt
Chiropractor	6	8	9	35		5	12	75
sonst. Chiropraktik	4	6	1	13	1		5	30
praktischer Arzt	5		5	7			8	25
Osteopath	2		1	5	1	1	3	13
Physiotherapeut	2			5				7
Selbstbehandlung	1	1	1	2				5
Ehefrau							1	1
Friseur				1				1
Kung Fu			1					1
[unbekannt]	7		2	10			3	22
gesamt	27	15	21	79	2	6	33	183

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Syndromes after a vertebrobasilar stroke

- Wallenberg syndrome (Occlusion of the inferior posterior cerebellar artery)
- "Locked-in syndromes (occlusion of the basilar artery)
- Other brainstem syndromes
- Damage to the occipital lobe
- Damage to the cerebellum
- Damage to the thalamus

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vascular accidents due to rotation and/or extension of the head

- Birth
- by surgeon / anaesthetist during surgery
- "calisthenics"
- Yoga
- Overhead work
- Neck extension during radiographs
- Neck extension during nosebleeds
- Turning the head while driving
- Archery
- Wrestling / Catching
- Emergency resuscitation
- Stargazing
- Sleeping position
- Swimming
- Rap Dance
- Fitness exercises
- Beauty salon / hairdresser
- Tai Chi

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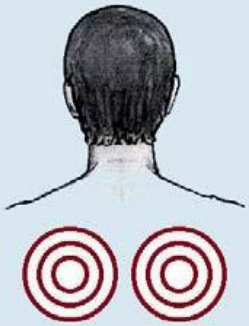
Calibre variations of the vertebral artery depending on head movement



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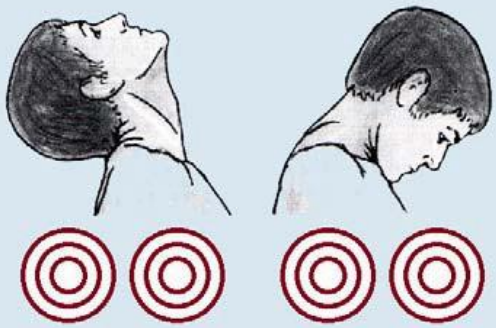

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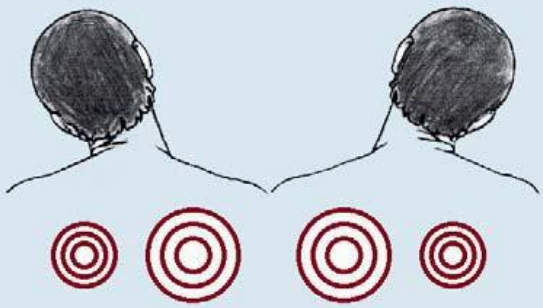

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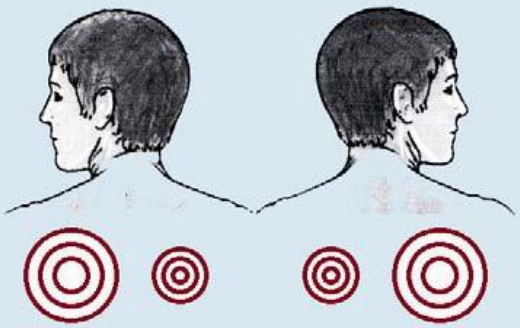

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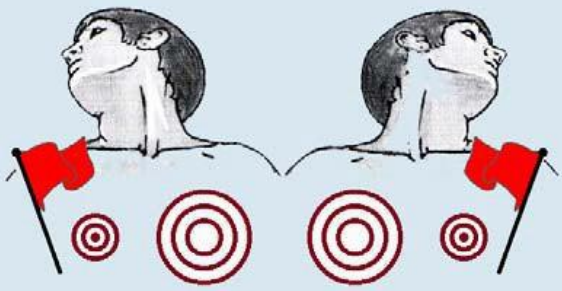

The blood flow to the load side is already throttled under physiological conditions!

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Functional tests:

- Hautan sample
- DeKleijn Hanging Test
- Unterberger kicking attempt
- Maigne or Smith and Estridge trial
- Reclination test

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Warning signs in the medical history:

- all signs and symptoms of vertebrobasilar ischaemia
- Sudden extreme headache or neck pain never experienced before.
- All signs and symptoms of carotid ischaemia
- A migraine history can be an important risk factor
- Cortisone treatment

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Warning signs during treatment:

- Signs and symptoms of vertebrobasilar ischaemia
- sudden severe headache or neck pain

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6 steps to avoid complications

Step 1:

As a practitioner, you can never be absolutely sure whether the patient's unsteadiness or dizziness is due to damage (dissection) of the artery wall or not.

If in doubt, use low-force techniques and connective tissue techniques!

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6 steps to avoid complications

Step 2:

If the patient describes severe head and/or neck pain that they have never experienced before, this may indicate damage (dissection) to the vertebral artery.

It is very difficult for the practitioner to judge whether the pain is vascular or muscular in origin.

Treatment should therefore be carried out very carefully as long as there is no concrete diagnosis!

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6 steps to avoid complications

Step 2:

In this case, use other forms of treatment (connective tissue techniques or similar)!

If after one or two treatments the pain decreases significantly, the discomfort is more likely to be muscular in origin and it is safe to proceed with chiropractic techniques.

If the symptoms do not improve, one should think of a damage (dissection) of the vertebral artery.

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6 steps to avoid complications

Step three: As a practitioner, you can never be absolutely sure whether the cause of vertigo in the patient is an arterial wall injury or muscular-articular.

When in doubt, use low-force techniques and connective tissue techniques

Often, after a manipulation of the cervical spine, the dizziness cannot be reproduced with functional tests.

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6 steps to avoid complications

Step 4:

If the functional tests are negative and there is no dizziness or other signs of arterial injury, this does not necessarily mean that there is no underlying arteriopathic process in the patient!

When in doubt, use low-force techniques and connective tissue techniques

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6 steps to avoid complications

Step 5:

If noticeable symptoms occur during treatment:

STOP!

You cannot achieve anything by retraumatising an artery that is already undergoing a pathological change anyway.

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6 steps to avoid complications

Step 5:

If noticeable symptoms occur during treatment:

Leave the patient alone and he will be able to recover.

Further chiropractic treatment could lead to permanent neurological deficits, quadriplegia or even death.

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6 steps to avoid complications

Step 6:

If there are signs of vertebrobasilar ischaemia:

1. never re-manipulate the cervical spine!

You cannot achieve anything by retraumatising an artery that is already undergoing pathological change anyway, and it will certainly result in further arterial damage and thus a fiasco.

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6 steps to avoid complications

Step 6: If there are signs of vertebrobasilar ischaemia:

2. observe the patient!

If the symptoms disappear within a short time, this indicates transient vertebro-basilar ischaemia caused by minor arterial damage, spasm or proprioceptive effects.

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6 steps to avoid complications

Step 6: If there are signs of vertebrobasilar ischaemia:

3. refer the patient!

If symptoms persist, do not panic and above all do not re-manipulate the patient.

If the symptoms increase and do not subside, the patient must be taken to hospital.

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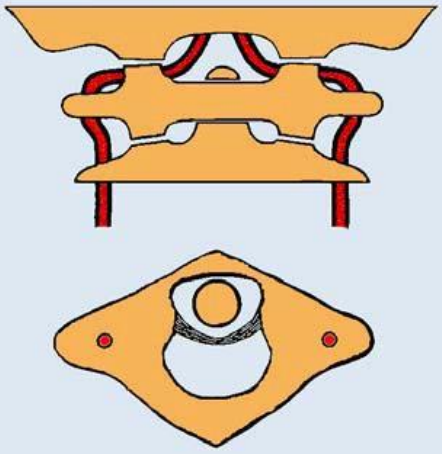
Position of the atlas and course of the vertebral artery



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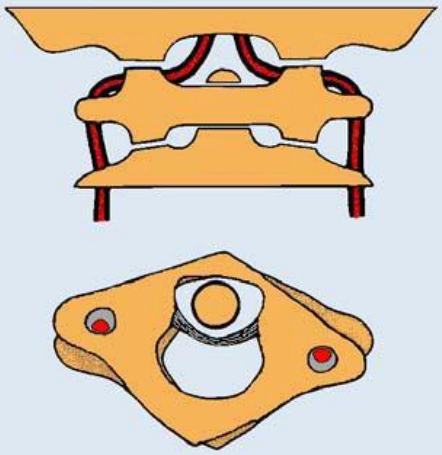

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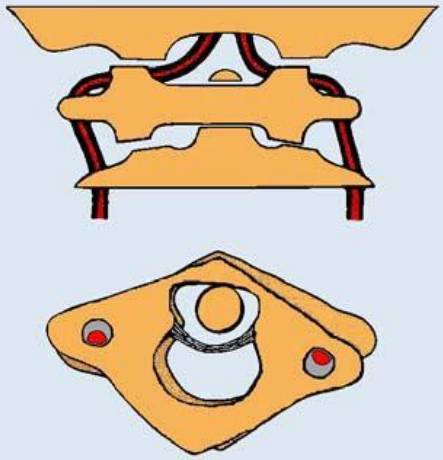

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Position of the atlas and course of the vertebral artery