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介入治疗解剖学图谱

神经血管



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内容提要 Abstract

本图谱是一部专门介绍神经介入的血管解剖学与影像学基础的图谱集。该书巧妙地将人体血管铸型标本、生物塑化标本与血管造影片结合起来，汇集成了一本脑和脊髓血管解剖与影像学图谱，使一条条原本枯燥难记的血管变得栩栩如生，极富立体感和真实感。从穿刺入路、颈动脉系统、椎基底动脉系统及部分脊髓血管等方面，系统地介绍了正常神经血管的解剖学和影像学知识。所有血管标本均是近年来从国人尸体解剖标本中精心选材和制作的。所有数字减影照片也都是近年来作者在神经介入临床工作实践中获得的标准图片。有关血管同时配有血管铸型标本和塑化标本彩色照片、血管造影照片和标准模式图片，便于理解记忆，实用性很强。每个解剖名词还同时以中英文形式标出，便于读者迅速提高英语专业水平。对于有志于从事神经介入方面学习和研究的神经内外科和神经放射科医生和研究生，以及从事血管外科、眼科、耳鼻喉科、颌面外科、整形外科等的临床医生和医学院校师生是一本很有价值的参考书。

This book is an atlas that specially introduces the vascular anatomical and imageological basis of neurointervention. We dexterously combined the vascular corrosion specimens and plastinated specimens with vascular angiograms, and then compiled an anatomical and imageological atlas of encephalic and spinal blood vessels, which made each vessel full of lifelike and stereoscopic sensation. In the fields of vascular approaches, carotid artery system, vertebrobasilar artery system and partial spinal blood vessels, the atlas explains the anatomical and imageological knowledge systemically. All the vascular specimens were elaborately selected and made from Chinese anatomical specimens. All the vascular angiograms are standard pictures obtained from the author's clinical interventional work in recent years as well. The correlative blood vessels are provided with color photos of vascular casting and plastinated specimens, as well as vascular angiograms and standard diagrams, which have great practicability and is very helpful for memory. Each anatomical term is labeled in a bi-lingual format, which can help readers improve their professional English rapidly. This atlas is a valuable reference book for prospective interventional colleagues such as doctors of neurology, neurosurgery and neuroradiology departments, doctors of vascular surgery, ophthalmology, E.N.T., mandible-facial surgery and plastics departments, and medical university teachers, postgraduates and graduates as well.

丛书前言

人体解剖学是一门古老的形态科学，是重要的医学基础学科。人体解剖学通过提供人体形态资料来为临床的诊断和治疗服务。随着现代科学技术的不断发展，各种新兴的临床诊治方法和手段不断涌现，同时也提出了更多的人体解剖学新课题。

介入治疗学是20世纪70年代开始发展起来的一门医学影像学和临床治疗学相结合的新兴边缘学科，它是在X线、B超或CT指导下，将特制的导管经人体的自然管道送到病变部位，进行血管再通、血管栓塞、血管成形、药物灌注等以达到临床治疗的目的。介入治疗的医生已能把导管或其他器械介入到人体几乎所有的血管分支和其他管腔结构（消化道、胆道、气管、鼻管等），以及某些特定部位，对许多疾病实施局限性治疗。因介入治疗具有微创、安全、操作简单、疗效好、见效快及可重复性等诸多优点，因此已成为与内科和外科治疗并列的三大治疗手段。由于其近十几年的迅速发展，对许多以往临床上认为不治或难治之症，均开辟了新的有效的治疗途径。目前，介入治疗已成为现代医院临床治疗的主要手段之一，呈现出提高与普及同步发展的可喜局面，并将成为21世纪最有发展前途的临床医学专科之一。

目前，在国内专为配合临床介入治疗的解剖学图谱还尚未见到，由于相关的解剖学知识的不足，限制了一些单位开展介入治疗技术。因此，大连医科大学的一批年轻学者勇敢地承担起这一艰巨的任务，编写了这部《神经介入治疗解剖学图谱》，其中包括心血管系统、神经系统、消化呼吸系统、泌尿生殖系统和骨与软组织系统五个分册。

该图谱具有以下特点：（1）从介入治疗临床实践出发，重点对介入治疗所需解剖结构的细节进行显示。（2）所有结构均通过实物彩色照片进行显示，立体感强，真实性强，实用性强。（3）用中英文两种文字对照说明，便于学习和交流。但由于我们学术水平不高，学识有限，缺乏经验，因此，本图谱一定有不少的缺点和错误，恳请各位前辈和同行批评指正。大连医大生物塑化有限公司为本图谱制备了全部的解剖标本，特此致谢。

隋鸿锦

2006.1.26

Foreword

Human anatomy is an ancient morphological science, which is the important basic course of medical curriculum. It gives service to clinical diagnosis and therapy by providing the morphological data. Along with the incessant progress of modern science, various burgeoning methods for clinical diagnosis and treatment come forth constantly, which puts forward more and more new anatomical tasks simultaneously.

Interventional therapeutics appeared in the 1970's is a fresh marginal subject that combines medical imageology with clinical therapeutics. A special catheter is inserted to the diseased place through the natural tunnels of the body (arteries, veins, etc.) under the guidance of X-ray, CT or B-mode ultrasonography, and vascular recanalization, vascular embolism, vascular angioplasticity, drug perfusion and so on can be performed for the purpose of clinical treatment. In order to implement the regional therapy for many diseases, interventional doctors have been able to insert catheters or other instruments into almost all vascular branches, cannular structures (digestive tract, biliary ducts, and respiratory tract, etc.), and some special regions. Interventional treatment, together with medical and surgical treatments, has become one of the three important therapeutic means, because of its advantages of minimal invasiveness, good safety, simple operation, excellent and rapid therapeutic effects. Due to its rapid development during the recent decade, it has broken a fresh and effective therapeutic path for many incurable or refractory diseases. Now, interventional treatment that has become a main means for clinical therapy in modern hospitals is presenting a delightful complexion of improvement and popularization, and will become one of the most promising clinical subjects in the 21st century.

At present, there are no anatomical atlas designedly assorting with the clinical interventional treatment at home, which restricts some units develop this technique for the lack of correlative anatomical knowledge. Therefore, a group of young scholars in Dalian Medical University bravely took on this arduous mission and compiled this Anatomical Atlas for Interventional Therapy, which includes cardiovascular system, nervous system, digestive and respiratory system, genitourinary system, bone and soft tissue system-five fascicules.

The atlas is provided with the following features: 1. In order to serve the clinical practice, emphasis is placed on the demonstration of anatomical details required by interventional treatment. 2. All of the structures are shown with color photos of real specimens, which endows the atlas with high stereoscopic sensation, authenticity and practicability. 3. All anatomical terms are labeled in a bi-lingual format (Chinese and English) in order to help promote international studies and exchanges. However, because of our limited academic level and knowledge, this atlas must have respectable defects and errors. We would be much obliged if experts and colleagues could point out mistakes so that they can be corrected. We wish to express our heartfelt thanks to Dalian Medi-Uni Plastination Co.Ltd. which provided all the specimens for this atlas.

Dr. Hong-Jin Sui

Jan.26, 2006

本书序言

神经介入始于20世纪70年代初期。二十多年来,随着介入技术的进步,尤其是数字减影血管成像技术、软件处理技术、生物与材料技术的迅猛发展,神经介入已经日臻成熟,并展示了广阔的应用范围和良好的发展前景。神经介入在我国始于20世纪80年代初期,在神经内外科和神经放射科前辈们的艰苦努力下,经过二十多年的推广和应用,这门新兴学科已经有了长足进步。然而,不能不看到,无论是技术水平还是普及程度,无论是基础研究水平还是创新开发能力,我们与发达国家相比都存在一定的差距。值得欣慰的是,近年来,神经介入正被愈来愈多的医务人员所认识和接受,并已成为临床医生尤其是神经内外科医生普遍感兴趣的一项热门学科。甚至一些从事与头颈部器官相关疾病研究的非神经内外科医生,如普通外科、眼科、耳鼻喉科、颌面外科、整形外科等,也都对介入治疗发生了浓厚兴趣。但是,神经介入目前之所以远没有心脏介入和外周介入开展得普遍,主要是因为:一、中枢神经细胞与心肌细胞和其他外周器官细胞不同;二、供应中枢神经系统的血管结构与供应心脏等外周器官的血管结构不同。由于这些的不同,决定了神经介入的高复杂性和高风险性。因此,从事神经介入的临床医生必须有扎实的神经解剖学基础知识。因为神经介入不仅仅局限于血管狭窄的支架植入,像颅内动脉瘤、脑与脊髓血管畸形、颈动脉海绵窦瘘、硬膜动静脉瘘、头颈部高血运肿瘤等的介入治疗,都要求操作者具备坚实的神经解剖和血管解剖基本功。没有这些解剖学的基本功,就不能对脑和脊髓血管疾病作出准确的诊断,更谈不上进一步的治疗包括介入治疗。

尹琳博士作为一名神经内科医生较早就在国内开展了急性缺血性脑卒中的介入治疗。他曾于1995年留学日本学习神经介入技术,后又留学德国,师从德国介入神经放射学会主席、德国Freiburg大学神经中心Schumacher教授,系统学习各种神经介入技术,并于2000年获得神经介入博士学位。2001年回国以后,全面开展了包括超急性期脑梗死的动脉内容栓治疗、头颈部血管狭窄的支架植入治疗、颅内动脉瘤与脑血管畸形的栓塞治疗等在内的各项神经介入工作。作为一名神经内科医生,这在国内是比较突出的,也是很不容易的。目前他还承担着包括国家自然科学基金、国家教委、国家科委以及省市多项科研课题。本书的另一位作者隋鸿锦博士长期从事神经解剖学研究与教学工作。他曾留学德国著名的Heidelberg大学,从事生物塑化技术的学习与研究。回国后率先在国内成立了生物塑化研究所,专门从事生物塑化标本的制作和研究,已达到国际领先水平。

本书作者们巧妙地将人体血管生物塑化标本与血管造影片结合起来,汇集成了一本脑和脊髓血管解剖与影像学图谱,使一条条原本枯燥难记的血管变得栩栩如生,极富立体感和真实感,这在国际国内同类书籍中也是不多见的。所有血管标本均是近年来从国人尸体解剖标本中精心选材和制作的。所有数字减影照片也都是近年来作者在神经介入临床工作实践中获得的图片,图片非常标准。有关血管同时配有血管铸型标本和塑化标本彩色照片,血管造影照片和标准模式图片,便于理解记忆,实用性很强。每个解剖名词还同时以中英文形式标出,便于读者迅速提高英语专业水平。因此,无论从创新性,还是从实用性来看这都是一部很有价值的学术参考书。相信这本书的出版,必将为广大读者带来裨益。希望这些年轻的作者们再接再厉,为我国的介入医学作出新的更大的贡献。

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吴中学

2006年2月20日于北京

Preface

Neurointervention was started at early 1970's. Over the past twenty years Neurointervention has gained great improvement and showed broad scope for application as well as satisfactory prospect for further development with progress of techniques, especially DSA technique, software processing technique, biological and material technique. Neurointervention was started at early 1980's in our country. After about twenty year of spread and application, this newly rising science already had great progress under the hard work of seniors from neurology, neurosurgery and neuroradiology departments. However, it is apparent that there are still some gap between our country and developed countries in aspect of either technical level or popularity degree, either basic research level or ability to bring new ideas. What worth gratifying is that in recent years Neurointervention has been known and accepted by more and more medical workers and become a popular science on whom clinical doctors especially neurologists and neurosurgeon are keen. Even some non-neurological doctors who are engaging in research of diseases relating to organs in head and cervical part, such as doctors of common surgery, ophthalmology, E.N.T., mandible-facial surgery, plastics and so on, had great interest too on Neurointervention. Nevertheless the major reasons why Neurointervention has not been carried out extensively as cardiac intervention and peripheral intervention are: First, central nervous cells are different from cardiac muscle cells and other peripheral organ cells; Second, structures of blood vessel supplying central nervous system and blood vessel supplying peripheral organ such as heart are different. Above-mentioned differences made Neurointervention full of high complexity and high risk. Therefore, clinical doctors engaging in Neurointervention must have enough basic knowledge of neuro-anatomy, because Neurointervention is not only limited to stent implantation of blood vessel stenosis, many other diseases such as intracranial aneurysms, brain and spinal blood vessels malformations, carotid-cavernous fistula, dural arteriovenous fistulae and hypervascular head-cervical tumors can be treated by Neurointervention which require operators have solid basic knowledge of neuro-anatomy and vascular anatomy. Without these basic knowledge, brain and spinal vascular diseases can not be diagnosed correctly let alone further treatment including interventional treatment.

As a neurologist, Dr. Lin Yin early started interventional treatment on acute ischemic stroke in China. He went to Japan to study Neurointervention technique in 1995, and then studied in Neurocenter, Freiburg University, Germany, following Prof. Schumacher, chairman of German Society of Neuroradiology. He systematically studied various Neurointerventional techniques and obtained Doctor's degree of Neurointervention in 2000. Since returning to China in 2001, he has carried out large number of various Neurointerventional treatments including intra-arterial thrombolysis of super acute cerebral infarcts, stent implantation of head-cervical vessel stenoses, embolization of intracranial aneurysms, brain vascular malformations, etc. As a neurologist, this is fairly outstanding and very difficult in China. At present he is undertaking various scientific research programs from National Committee of Natural Science Foundation, National Committee of Education, National Committee of Science and Technology, and so on. Another author of this book, Dr. Hongjin Sui has engaged in researching and teaching of neuro-anatomy for a long time. He ever studied abroad in the famous Heidelberg University, Germany and engaged in learning and researching of plastination technique. After returning to China, He firstly established a plastination institute, specialized in manufacturing and researching of plastinated specimen and up to international leading level now.

Authors of this book dexterously combined the vascular corrosion specimens and plastinated specimens with vascular angiograms, and then compiled an anatomic and imageological atlas of brain and spinal blood vessels, which made each vessel full of lifelike and stereoscopic sensation. This is not commonly seen in the same kind books, either national or international. All the vascular specimens were elaborately selected and made from the native anatomic specimens. All the vascular angiograms are standard pictures obtained from the author's clinical interventional work in recent years. The correlative blood vessels are provided with color photos of vascular casting and plastinated specimens, as well as vascular angiograms and standard mode charts, which have great practicability and are very helpful for memory. Each anatomic term is labeled in a bi-lingual format, which can help readers improve their professional English level rapidly. Therefore this atlas is a valuable reference book either from novelty or from practicability. I deeply believe that publication of this book will bring benefit to readers and hope those young authors continue their work and make greater new contributions for our national interventional medicine.

Wo Zhongxue

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Vice-Chairman, Beijing Neurosurgical Institute

Chairman, Training Center of Neurointerventional Treatment, Chinese Academy of Medical Sciences
Feb 20, 2006 Beijing

本书前言

一年多以前,一个偶然的的机会,我去大连医科大学生物塑化有限公司观看了他们的人体解剖标本。看完了他们的杰作,我不禁感叹:这哪里是解剖标本,分明就是一件件艺术作品!他们应用国外先进技术,创造了一个个世界上独一无二的人体生物塑化标本。那一条条血管,哪怕再细微,也都显示得那么地栩栩如生!为什么不把这项技术与自己的枯燥难懂的血管造影片结合起来、献给更多有志于神经介入(neurointervention)的同道们呢?这,就是我们编写这本《介入治疗解剖学图谱——神经血管》分册的原因!本书选用了大量的人体血管铸型标本和塑化标本,结合正常血管的选择性和超选择性造影结果,每张图都尽可能地配以标准的模式图,从穿刺入路(vascular approaches)、颈动脉系统、椎基底动脉系统及部分脊髓血管等方面,系统地介绍了正常神经血管的解剖学和影像学知识。所有标本栩栩如生、立体感强,有助于理解和记忆。所有影像照片均选自这些年来我们在神经介入实践中获得的尽可能标准的图片。所用解剖名词主要依据中国解剖学会编写的《中国人体解剖学名词》,每个名词同时以中英文形式给出,以利于读者迅速提高专业英语水平。如果本书能对有志从事神经介入的神经内外科同道和相关学科的临床医生和研究生有所帮助的话,那将是我们最大的欣慰。

由于我们的水平有限,经验不足,书中不妥或误谬之处在所难免,还望前辈、老师及同道们不吝赐教。

尹 琳

2006年2月18日于大连

Foreword

About one year ago, it was an occasional chance that I went to Medi-Uni Plastination Co.Ltd. and visited their specimens of human bodies. After visiting their masterpieces, I couldn't help gasping in admiration: they were not anatomical specimens but works of art! They created many plastinated specimens by applying an advanced foreign technique, which were unique in the world. Even though some blood vessels were so tiny, they seemed to be true to life! Why not combine this technique with my boring vascular angiograms and dedicate it to more and more prospective interventional colleagues? This is the reason why we compiled this Anatomical Atlas for Interventional Treatment—Neurovascular fascicule. The atlas selects a lot of vascular casting or plastinated specimens and combines them with selective and superselective angiograms of normal vessels. Each picture is tried to mate a standard diagram. In the fields of vascular approaches, carotid artery system, vertebrobasilar artery system and partial spinal blood vessels, the atlas explains the anatomical and imageological knowledge systemically. All the specimens with high stereoscopic sensation are so lifelike which can help readers understand and remember correlative knowledge. All the angiograms are rather standard pictures selected from our interventional practice in the recent years. The anatomical terms are labeled in a bi-lingual format according to Chinese Human Anatomic Terms, which was compiled by Chinese Society for Anatomical Sciences. This Chinese/English bi-lingual form can help readers improve their professional English rapidly. If the atlas could give some help to prospective neurointerventional colleagues, clinical doctors and post graduates of correlative subjects, it would be our best encouragement.

Because of our limited knowledge and poor experience, defects and errors are unavoidable, which we expect to be corrected by experts and colleagues liberally.

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