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Кафедра лучевой диагностики и лучевой терапии

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RADIOLOGY AND RADIOTHERAPY

ЛУЧЕВАЯ ДИАГНОСТИКА И ЛУЧЕВАЯ ТЕРАПИЯ

Допущено Министерством образования Республики Беларусь в качестве учебного пособия для иностранных студентов учреждений высшего образования по медицинским специальностям

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The textbook gives modern data on bases of radiology and radiation therapy. Algorithms and diagnostic criteria of the basic diseases of bones and joints, respiratory, cardiovascular, digestive, urinary systems are presented. Main principles of radiation therapy are stated. The textbook contains information on radiation doses in radiology, possible harmful effects of radiation therapy and methods of irradiation restriction.

The manual is intended for the third year students of the faculty of foreign students.

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CONTENTS

GLOSSARY

2DE	Two-dimensional echocardiography
A/kg	Amperesonkg
B-mode	Brightness mode
C/kg	Coulomb/kilogram
CA	Contrast agents
CAD	Coronary artery disease
CRE	Cumulativeradiatingeffect
CT	Computed tomography
CTV	Clinical target volume
CdS	Crystals of cadmium sulphide
DSBs	Doublestrandbreaks
EPC	Endoscope pancreatic cholangiography
FDG	Fluorodeoxyglucose
Gd-DTPA	Gadolinium- diethylenetriaminepentaacetic acid
GT	Gastrointestinal tract
GTV	Gross tumour volume
Gy	Gray
HBO	Hyperbaricoxygenation
HCT	Helical CT
HU	Hounsfield units
ICRP	International Commission on Radiological Protection
ICRU	International Comission Radiation Units and Measurement
IGRT	Image guided radiation therapy
IMRT	Intensity-modulated radiation therapy
IQ	Intelligence quotient
IU	Intravenous urography
IVC	Inferior vena cava
IVP	Intravenous pyelogram
J/kg	Jouleonkg
LAO	Left anterior oblique
LET	Linearenergytransfer
LVC	Left ventricular configuration
M-mode	Motion mode
MRA	Magnetic resonance angiography
MRI	Magnetic resonance imaging
MTS	Metastasises
MUGA	Multigated equilibrium studies
NSD	Nominalstandarddose
OAR	The-organ-at-risk
OER	Oxygenenhancementratio
PET	Positron-emission tomography

PTC	Percutaneous transhepatic cholangiography
PTV	Planning target volume
PVO	Pulmonary venous obstruction
QF	Qualityfactor
R	Roentgen
R/h	Roentgen/hour
R/m	Roentgenperminute
R/s	Roentgenpersecond
RAO	Right anterior oblique
RBE	Relativebiologicaleffectiveness
RCC	Renal cell carcinoma,
Rem	Radiationequivalentinman
RP	Radiopharmaceutical
SPECT	Single photon emission tomography
SSBs	Singlestrandbreaks
SI	System international
TDF	Time a dosefractionation
TNM	T = tumor; N = nodes; M = metastases system
TTD	Tissuetolerancedose
T	Tesla
US	Diagnostic ultrasound

PREFACE

Radiology in clinical practice in many cases gives the information necessary for statement of the diagnosis which is inaccessible to other methods of clinical examination. Radiation therapy is widely applied in oncology; more than half of oncological patients receive beam treatment. In predegree training of doctors of any speciality it is necessary to provide study of bases of radiology and radiation therapy to give knowledge and practical skills of modern methods of diagnostic visualisation and radiation therapy in clinical medicine. It is urgent for medical students. At the same time, in radiology and radiation therapy the greatest share of population anthropogenous irradiation is realised. Students should also be aware of medical irradiation restrictions.

The textbook includes basic theoretical sections of radiology and radiation therapy for students of medical university. Principles of beam research methods are given. Questions of modern beam diagnostics are considered in sections of diagnostic radiology of the bones and joints, respiratory, cardiovascular, digestive, urinary systems. Physical and biological principlesand methods of radiation therapy are presented. For all kinds of radiology and radiation therapy harmful influences and measures on restriction of a medical irradiation are specified.

The textbook will give students the information on principles and possibilities of modern methods of diagnostic radiology and radiation therapy. It will help to use methods of radiology and radiation therapy, methods of reading basic beam symptoms and syndromes in diagnostic images, restrictions of medical irradiation in clinical practice.

The characteristic feature of this textbook is the detailed information on medical irradiation restrictions, complex study of radiodiagnostics, its modern methods and possibilities. The extensive illustrative material is presented.

The textbook is intended for the third year students of medical university.