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Scripta Scientifica Medica

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Design and Layout Editing:

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Web Design and Development:

Tsvetan Petrov

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Medical University of Varna

Proofreading:

Yordanka Peteva

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ACIBADEM CITY CLINIC TOKUDA HOSPITAL, SOFIA

EMERGENCY RADIOLOGY

June 2-3, 2017

ABSTRACTS

of the

Meeting of the Organization of Young Radiologists
in Bulgaria, Branch of the Bulgarian Association of
Cardiothoracic Radiology

RADIOLOGY TOGETHER

Let's work together

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6th MEETING
EMERGENCY
RADIOLOGY

02-03/06/2017

RADI T LOGY GETHER

ACIBADEM CITY CLINIC TOKUDA HOSPITAL, SOFIA

PROGRAM

Day 1		
8:00-9:30	OPENING SESSION Moderator: Dr. Gavril Nakov (Acibadem City Clinic – Tokuda Hospital, Sofia)	
8:00-8:10	Dr. Gloria Adam, Chairman of the Congress on behalf of the Organizing Committee	Opening
	Prof. Galina Kirova-Nedyalkova, Chairman of BSCTR	Salutations on behalf of BSCTR
8:10-8:25	Prof. Peter Mildemberger (Chair of the ESR Subcommittee on Professional Issues and Economics in Radiology)	Presentation on ESR
8:25-8:40	Dr. Tsevetelina Teneva (Member of the ESR RTF Subcommittee Board) Robert Grünkranz, (ECR, Vienna)	ESR Residents Invest in the Youth Programme
8:40-9:00	Prof. Peter Mildemberger (University Mainz)	Management Issues in Emergency Radiology
9:00-9:20	Assoc. prof. Nikolay Mladenov (Acibadem City Clinic Tokuda Hospital, Sofia)	Medical Management in Blast Terror Attacks Among the Civil Population - Children and Adults
9:20-9:30	Discussion	
9:30-9:45	Coffee break (15 min)	
9:45-10:15	Pharmaceutical Presentation: Siemens	Advanced Visualization – Get the Most out of Your Images
10:15-11:00	Pharmaceutical Presentation: Bracco, Dr. Federico Sabino	Contrast Agent for Imaging: from a Molecule to Contrast Media for Clinical Applications
11:00-11:15	Coffee break (15 min)	

11:15-12:30	FIRST SESSION: Cardiovascular Emergency Moderator: Dr. Daniela Kaloyanova (St. Marina University Hospital, Varna)	
11:15-11:35	Prof. Galina Kirova (Acibadem City Clinic Tokuda Hospital, Sofia)	The Acute Chest Pain Unit
11:35-11:55	Assoc. prof. Maria Nedevska (University Hospital St. Ekaterina, Sofia)	Acute Coronary Syndrome Rule-Out Protocol
11:55-12:15	Dr. Tatiana Nenkina (Acibadem City Clinic Tokuda Hospital, Sofia)	Nonvascular, Nontraumatic Mediastinal Emergencies
12:15-12:30	Discussion	
12:30-12:45	Coffee break (15 min)	
12:45-14:00	SECOND SESSION: Abdominal Emergency Moderator: Dr. Marsella Al-Amin, MD (University Hospital Sofamed, Sofia)	
12:45-13:05	Dr. Ivan Plachkov (Acibadem City Clinic Tokuda)	Gastrointestinal Emergencies – Signs and Pitfalls
13:05-13:25	Assoc. prof. Vesselka Stoyanova (Acibadem City Clinic Oncology, Sofia)	Imaging of Abdominal Vascular Emergencies
13:25-13:45	Dr. Dilyana Baleva (Landesklinikum Mistelbach)	Imaging Modalities in Abdominal Trauma
13:45-14:00	Discussion	
14:00-14:30	Lunch break (30 min)	
14:30-16:00	THIRD SESSION: Pediatric Radiology Moderator: Dr. Maria Neshkinska (St. Marina University Hospital, Varna)	
14:30-14:50	Prof. Boyan Balev (St. Marina University Hospital, Varna)	Pediatric Gastrointestinal Emergencies - Ultrasound and Conventional Imaging
14:50-15:10	Dr. Plamen Getsov (University Hospital Tsaritsa Ioanna, Sofia)	Aspirated Foreign Bodies in Children
15:10-15:30	Prof. Boyan Balev	Child Abuse Syndrome
15:30-15:50	Dr. Teodora Kiryakova (Alexandrovsk Hospital, Sofia)	Child Abuse – the Forensic Expertise
15:50-16:00	Discussion	
16:00-16:15	Coffee break (15 min)	
16:15-17:15	Prof. Galina Kirova	Workshop 1: Cardiovascular Emergencies

17:15-18:15	Prof. Boyan Balev	Workshop 2: Pediatric Emergencies
19:30	GALA DINNER – “S*Bar” (6 Nikola Vaptsarov Blvd)	
Day 2		
8:00-9:30	FOURTH SESSION: Musculoskeletal Emergencies Moderator: Dr. Maria Eneva (University Hospital St. Ekaterina, Sofia)	
8:00-8:20	Assoc. Prof. Igor Boric (Orthopaedic Hospital St. Katarina, Zagreb)	How to Approach in a Case of Sports Trauma
8:20-8:40	Dr. Elena Ilieva (Hospital for Active Treatment and Emergency Pirogov, Sofia)	Musculoskeletal Emergencies – What the Radiologist Needs to Know?
8:40-9:00	Dr. Ivo Nikolov (Medical Center Spektar, Sofia)	Magnetic Resonance Diagnostics of Muscle Trauma
9:00-9:20	Assoc. Prof. Igor Boric	Common Pitfalls and Mistakes in Lower Extremity Trauma
9:20-9:30	Discussion	
9:30-9:45	Coffee break (15 min)	
9:45-11:30	CASES FROM THE PRACTICE Moderator: Dr. Snejina Georgieva (University Hospital Alexandrovska, Sofia)	
	Dr. Gergana Diakova, Dr. Natalia Mladenova, Dr. Snejina Georgieva, Dr. Maria Eneva, Dr. Elisabeth Panova, Dr. Desislava Ilieva, Dr. Ralitsa Popova, Dr. Tsvetelina Teneva	
11:30-12:00	Pharmaceutical Presentation: Bayer	
12:00-12:15	Coffee break (15 min)	
12:15-13:15	FIFTH SESSION: Neurologic Emergencies Moderator: Dr. Borislav Kochmalarski (University Hospital St. Ivan Rilski, Sofia)	
12:15-12:35	Dr. Marin Penkov (University Hospital St. Ivan Rilski, Sofia)	State-of-the-Art Imaging in Acute Ischemic Cerebral Infarction
12:35-12:55	Dr. Stanimir Sirakov (University Hospital St. Ivan Rilski, Sofia)	Endovascular Treatment of Stroke
12:55-13:15	Dr. Kalina Chupetlovska (University Hospital St. Ivan Rilski, Sofia)	Cervical Spine Trauma
13:15-14:15	Dr. Marin Penkov, Dr. Stanimir Sirakov	Workshop 3: Emergency Neuroradiology
14:15-14:30	CLOSING	

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Continuous medical education accreditation - 9 European CME credits by the European Accreditation Council for Continuing Medical Education (EACCME)

Free registration form on the BCTR website: http://www.bsctr.bg/da_rabotim_zaedno

Organizing Committee: Gloria Adam, Kalina Chupetlovska, Radina Radeva, Tsvetelina Teneva

Honorary member of the Organizing Committee: Prof. Galina Kirova-Nedyalkova

Contact: radiologytogether@gmail.com

Venue: Acibadem City Clinic Tokuda Hospital Sofia; 51B Nikola Vaptsarov Blvd, 1407 Sofia



PEDIATRIC GASTROINTESTINAL EMERGENCIES - ULTRASOUND AND CONVENTIONAL IMAGING

Balev BD¹, Baleva DB²

¹Department of Radiology, St. Marina University Hospital, Varna, Bulgaria

²Department of Radiology, Landes Krankenhaus, Mistelbach, Austria

BACKGROUND: The abdominal pathology of newborns and infants, unlike adults, manifests itself most often in urgent conditions. This requires that a decision be taken in the shortest possible time, applying an appropriate or a combination of modalities. The higher radiation sensitivity of pediatric patients must be taken into consideration.

LEARNING POINTS:

1. Why ultrasound and conventional X-ray imaging?
2. Tips about US and XR in children
3. US and XR diagnostic strength and significant findings in GIT emergencies (neonatal and infant group)

MAIN BODY: The advantages and disadvantages of imaging modalities are discussed, according to pediatric age. The imaging of the most common units causing acute abdomen in pediatric patients is presented: necrotizing enterocolitis, congenital diaphragmatic hernia, proximal and distal GI obstruction, intussusception, pyloric stenosis, appendicitis, and mesenteric lymphadenopathy.

CONCLUSION: We should know what condition to expect and how to search for it (age, clinical presentation, collaboration with pediatricians). Conventional radiology and ultrasound, especially in combination, may solve most of the problems in the pediatric abdomen. Perform XR and US with artistry to obtain the best diagnostic profit. Follow the ALARA/ALADA principle!

Keywords: imaging, pediatric, acute abdomen, congenital

IMAGING MODALITIES IN ABDOMINAL TRAUMA

Baleva DB

Landeskrankenhaus Mistelbach-Gänserndorf, Mistelbach, Austria

BACKGROUND: Trauma is the major cause of death prior to the fourth decade of life. Two main types of abdominal trauma are differentiated – blunt abdominal trauma and penetrating trauma.

LEARNING POINTS:

- Imaging modalities in trauma
- Appropriate imaging protocols and practical tips
- Basic findings in abdominal trauma
- Specific findings in organ trauma
- Classification of abdominal trauma

MAIN BODY: In the lecture, the effective imaging modalities of the acute abdominal trauma are discussed with a special accent upon the focused abdominal ultrasound in trauma (FAST) and the computed tomography (CT). Effective CT protocols are suggested together with practical tips for image evaluation. The imaging signs of the different traumatic organ lesions with relation to the staging of the lesion according to the American Association for the Surgery of Trauma (AAST) evaluation scale are discussed as separate topics.

CONCLUSION: The prompt application of suitable imaging has a crucial role in the setting of acute abdominal trauma.

Keywords: *abdominal trauma, AAST, hemoperitoneum, laceration*

COMMON PITFALLS AND MISTAKES IN LOWER EXTREMITY TRAUMA

Boric I

Department of Radiology, St. Catherine Orthopedic Hospital Zagreb, Croatia

BACKGROUND: Regardless of the experience of the treating physician, accurate detection and evaluation of musculoskeletal trauma is a challenge. Failure to diagnose is the most common error alleged in medical malpractice suits against radiologists, and extremity fractures are the second most frequently missed diagnosis (after breast cancer). More than half of the missed fractures occurred in the lower extremities, with the foot being the most missed location.

LEARNING POINTS: Keep in mind the most common mistakes in the interpretation of lower extremity trauma images and the possibility of their avoidance.

MAIN BODY: Radiography remains the initial modality to detect or exclude the presence of a fracture. Pitfalls for the radiologist that may result in a missed or delayed diagnosis abound in this circumstance. Although some missed fractures may be related to perceptual errors that appear to be avoidable in retrospect, others are related to anatomic, technical, and physiological factors that are out of the interpreting radiologist's control. Postulated reasons for these errors include subtle fractures and radiographically occult fractures.

CONCLUSION: The radiographic approach should be tailored to the patient's history and physical examination. The possibility that an unusual or unexpected finding may represent a normal physical variant should always be considered. Evaluation of the mechanism of injury, appearance of radiographic projections and plain film signs is useful in addition to advanced imaging techniques. Routine use of comparison films of the contralateral, asymptomatic side is not appropriate. However, this technique may be useful in the evaluation of skeletally immature patients with a suspected physical injury or when a normal variant is being considered.

Keywords: *lower extremity, trauma, mistakes, pitfalls*

HOW TO APPROACH IN A CASE OF SPORTS TRAUMA

Boric I

Department of Radiology, St. Catherine Orthopedic Hospital Zagreb, Croatia

BACKGROUND: Sports injuries are becoming more and more common in both top athletes and recreationalists. The need for fast and reliable diagnosis is exceptional. A proper diagnosis leads to proper treatment and faster return of the injured patient to sports activities.

LEARNING POINTS: Keep in mind the most common sports injuries and diagnostic possibilities to reach the fastest and most accurate diagnosis.

MAIN BODY: Acute or chronic sports injuries involve different body parts and different tissues: bones, muscles and tendons, ligaments, menisci and labrum, fat tissue, and the neurovascular bundle. Radiography remains the initial modality to detect or exclude the presence of a fracture or joint dislocation. In case of complex fractures or dislocation, computed tomography is the next method of choice. US provides sufficient information in soft-tissue injuries; it is the fastest way and without any harmful consequences for the patient. MRI gives comprehensive information about all injured tissues especially in multi-tissue injuries. SPECT-CT may be useful in cases of chronic trauma or overuse injuries. All of those methods have their own advantages and limitations. Knowledge about the possibilities and limitations of each of these methods is necessary in order to choose the optimal method for establishing a reliable diagnosis in the fastest way.

CONCLUSION: The radiographic approach should be tailored to the patient's history, physical examination and the mechanism of injury.

US is a crucial diagnostic method for soft-tissue injury, but MRI will cover whole spectra of injuries and provide the fastest and most accurate diagnostic information. It is a first-line diagnostic modality, especially in top athletes.

Keywords: *sports injury, radiological imaging, diagnostic algorithm, trauma*

CERVICAL SPINE TRAUMA

Chupetlovska KP, Penkov MB

Department of Radiology, University Hospital St. Ivan Rilski, Sofia, Bulgaria

BACKGROUND: Knowing that the cervical spine is susceptible to injury due to its high mobility and small vertebral body size, and keeping in mind the possibly fatal consequences of a spinal cord injury, all radiologists should be able to diagnose cervical spine trauma correctly.

LEARNING POINTS: To provide a review of the most common cervical spine injuries, to summarize their mechanisms and appearances and to present the systems to classify and the radiographic protocols to identify them.

MAIN BODY: First of all, a radiologist should be familiar with the functional anatomy of the cervical spine. Secondly, it is important to keep in mind the most common mechanisms of the cervical spine trauma and the unique fracture patterns that they are associated with. In addition, there are anatomical differences between children and adults, which should be considered when interpreting pediatric cases.

Plain radiographs are cheap, readily available, and approximately 85% of cervical spine injuries can be detected in lateral view radiographs. Therefore, it is evident why X-ray remains the primary method of assessing cervical trauma. However, when it comes to fractures, it is MDCT that has the highest sensitivity and MRI is unmatched in assessing soft tissue pathology.

CONCLUSION: Recognizing, classifying spinal injury and describing the associated pathology, is essential to the survival and recovery of the patients. Although MDCT scanning is the most efficient method for detecting and eliminating a spine injury, and MRI is the best method in evaluating intervertebral disc or ligament pathology, X-ray remains the mainstay in assessing spine trauma patients.

Keywords: *cervical spine trauma, spine injury, protocols, classification*

ASPIRATED FOREIGN BODIES IN CHILDREN

Getsov, PG

Department of Radiology, University Hospital Tsaritsa Yoanna, Sofia, Bulgaria

BACKGROUND: Accidental inhalation of both non-organic and organic foreign bodies continues to be a reason for childhood morbidity and mortality, requiring quick recognition and early treatment to reduce the potentially serious consequences. It can rarely lead to death.

LEARNING POINTS: To present the main hazards and the diagnostic algorithm in cases with aspiration of foreign bodies in children.

MAIN BODY: Most foreign bodies are organic, most commonly seeds and nuts. Non-organic foreign bodies vary dramatically and can include teeth, coins, batteries, pins, pens and crayons. Most children are witnessed to have an asphyxia event at the time of aspiration. They may also present with cough, dyspnoea or irritability. Because of the immaturity of the respiratory system of children, especially up to 1 year of age, those incidents can be particularly dangerous and insidious. Aspirated foreign bodies are predominant in the right tracheobronchial tree. Chest X-ray examination can be normal in one third of patients. Unilateral emphysema or atelectasis are the most common findings, uncommonly a radio-opaque foreign body can be demonstrated. CT is used less frequently in cases of chronic foreign bodies.

CONCLUSION: Prevention is best, but early recognition remains a critical factor in the treatment of foreign body inhalation in children. Foreign bodies in the respiratory tract in children should be seen as a serious problem for the medical team including paediatricians, radiologists, bronchoscopy specialists, anaesthesiologists, and thoracic surgeons in order to avoid complications and death.

Keywords: *foreign bodies, aspiration, children*

MUSCULOSKELETAL EMERGENCIES – WHAT THE RADIOLOGIST NEEDS TO KNOW

Ilieva, ED

*Department of Radiology, Pirogov Hospital for Active Treatment and Emergency, Sofia,
Bulgaria*

BACKGROUND: Many traumatic, vascular, infectious, and inflammatory emergencies affect the musculoskeletal (MSK) system.

LEARNING POINTS: To understand the value of different imaging modalities and to provide certain tips and tricks when reading MSK emergency cases.

MAIN BODY: MSK emergencies, especially trauma, are commonly encountered in the Emergency Department. The degree of MSK trauma ranges from trivial injuries to life-threatening ones. Imaging is of great importance when establishing a diagnosis and evaluating the full extent and severity of disease, ultimately impacting treatment. The most frequently used modality continues to be plain radiographs. For more complex injuries computed tomography (CT) is still the most commonly available and widely used cross-sectional imaging tool. Although CT has many advantages, the soft tissue detail offered by CT scanning is limited in the evaluation of MSK traumatic and non-traumatic emergencies. Further diagnostic information could be obtained either by ultrasound (US) or magnetic resonance (MR). US is effective in evaluation of effusions (joint and paratenon), cysts, ligaments, muscles, and tendons. In addition to its diagnostic benefits, US is used to guide aspirations and injections. MR imaging (not always available in the emergency centers) provides definitive diagnosis of soft tissue and bony injury both in low-velocity and high-velocity trauma. It acts as an excellent tool in problem solving in repetitive trauma as well as in complex sports injuries.

CONCLUSION: Imaging plays an integral role in the diagnosis and management of MSK emergencies.

Keywords: *musculoskeletal emergencies, traumatic, non-traumatic*

THE ACUTE CHEST PAIN UNIT

Kirova, GI

Department of Radiology, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

BACKGROUND: Chest pain is one of the most common reasons for visiting the Emergency Department (ED). Chest symptoms are common and are caused by numerous benign to life-threatening conditions and the challenge for ED physicians is to accurately and efficiently identify the small proportion of patients with myocardial infarction or other life-threatening conditions. Unfortunately, neither clinical presentation, traditional cardiovascular risk factors, nor clinical risk scores allow for a safe initial decision, which requires the implementation of a new diagnostic strategy.

LEARNING POINTS:

- To learn why a new diagnostic algorithm is needed for an early and precise diagnosis of patients with intermediate and low risk for life-threatening chest diseases;
- To learn about the possibilities of multidetector computed tomography (MDCT) to accurately detect and stratify patients with acute chest pain syndromes, to reduce the time delay for diagnosis and to maximize diagnostic and therapeutic alternatives and thereby improve outcomes;
- To discuss the cost effectiveness and applicability of the triple-rule-out protocol in the clinical scenario as well as the readiness of radiologist to provide coverage of the acute chest pain unit.

CONCLUSION: MDCT is a viable alternative to clinical and functional testing in the work-up of patients presenting with acute chest pain to the Emergency Department. More and more the new diagnostic algorithm for ruling out patients with devastating chest diseases is included in the standards.

Keywords: *acute chest pain unit, acute coronary syndrome, computed tomography coronarography*

FORENSIC MEDICAL ASPECTS OF CHILD ABUSE

Kiryakova, TG

*Department of Forensic Medicine and Deontology, Faculty of Medicine,
Medical University – Sofia, Bulgaria*

BACKGROUND: Child abuse is an extremely important legal, medical and social problem. A number of conventions and laws aimed to protect children have been accepted and ratified as an expression of the pursuit of complete and thorough childcare. Although violence against children can come in a variety of forms, from a forensic point of view, physical and sexual violence are of greatest importance.

LEARNING POINTS: The methods of identification of traumatic injuries, correct interpretation of the collected data, differential diagnosis between accidental injuries and cases of child abuse, the role of the clinician in clarifying the cases, the legal basis and the procedure for informing the competent authorities are presented.

MAIN BODY: In the Department of Forensic Medicine and Deontology, Sofia, hundreds of children and adolescence are examined each year. The main role of the forensic expert is to find whether there are visible signs of violence, their characteristics, the mechanism and the time of occurrence and their complications. To clarify some of these basic questions, collaboration with various medical professionals is needed. Furthermore, particular attention should be paid to children under the age of five, who cannot or do not give accurate information, and have difficulties in describing what has happened to them.

CONCLUSION: Child abuse has serious and severe consequences for the victims. Early recognition of the signs of violence by medical professionals and the collaboration work are of utmost importance to minimize the harmful effects and, in some cases, to save the child's life.

Keywords: *child abuse, forensic medicine, physical violence, sexual violence*

STATE-OF-THE-ART IMAGING IN ACUTE ISCHEMIC CEREBRAL INFARCTION

Penkov MB

Department of Radiology and Neuroradiology, University Hospital St. Ivan Rilski, Sofia, Bulgaria

BACKGROUND: In order to take advantage of the latest treatment options and keeping in mind that „time is brain“ in stroke management, the goal of imaging is to diagnose as early as possible, obtain accurate information about the cerebrovascular system and brain tissue perfusion, select the correct therapy and improve the outcome of one of the most debilitating and costly to society diseases.

LEARNING POINTS:

- to describe the basics of CT and MR techniques used to evaluate stroke;
- to determine an imaging protocol for acute stroke evaluation;
- to recognize the significance of a penumbra for therapy and prognosis after acute stroke.

MAIN BODY: Overall evaluation can be performed with computed tomography (CT) and/or magnetic resonance (MR).

Native CT can be performed rapidly to identify the early signs of ischemia and to exclude haemorrhage. CT angiography and CT perfusion, may display intravascular thrombosis and the penumbra. These tests are easy to perform on most spiral CT devices and are increasingly used in patients with IMI to decide on the type and volume of the necessary intervention.

Although acute attacks can be seen at the start of the conventional MRI, diffusion is the most sensitive series for the detection of hyperacute ischemia.

Gradient-echo MR sequences can be useful for detecting bleeding; the neck and intracranial vessels can be assessed with MR angiography, and the presence of „mismatch“ between the diffusion and perfusion can predict the existence of the penumbra.

CONCLUSION: Imaging technology has advanced rapidly in the past two decades, and current imaging techniques can be used to identify hyperacute stroke and guide therapy by providing information about the functional status of ischemic brain tissue. Both CT and MR imaging are useful for the comprehensive evaluation of acute stroke and can provide important and necessary information for therapy planning.

Keywords: *computed tomography, magnetic resonance, penumbra, acute stroke*

MEDICAL MANAGEMENT OF BLAST TRAUMA OF TERRORIST NATURE AMONG THE PEACEFUL POPULATION - CHILDREN AND ADULTS

Mladenov, ND

*Department of Anesthesiology and Intensive Care Unit, Acibadem City Clinic Tokuda
Hospital, Sofia, Bulgaria*

BACKGROUND: In the treatment of severely injured patients, the term ‘blast trauma - damage control radiology’ has been used parallel to the modern concept of damage control surgery and the allied development of continuous damage control resuscitation from patient retrieval, through all transfers, to appropriate primary treatment.

LEARNING POINTS: The aims of damage control radiology are: (1) rapid identification of life-threatening injuries including bleeding sites, (2) identification or exclusion of head or spinal injury, and (3) prompt and accurate triage of patients to the operating theatre for thoracic, abdominal, or both surgeries or the angiography suite for endovascular hemorrhage control.

MAIN BODY: The purpose of the presentation is to introduce my colleagues to the specifics of blast trauma among the peaceful population and on the basis of this, to draw the guidelines for its clinical and multimodal management.

CONCLUSION: Knowing the modern clinical aspects of blast trauma and its early diagnosis, allows the HTLS level to reduce mortality and increase the survival of the injured.

Keywords: *radiology, interventional; trauma; computed tomography*

ACUTE CORONARY SYNDROME – RULE-OUT PROTOCOL

Nedevska, ML

Department of Radiology, University Hospital St. Ekaterina, Sofia, Bulgaria

BACKGROUND: Acute chest pain is a common diagnostic dilemma in the Emergency Department. Patients with acute coronary syndrome often present with atypical chest pain complaints, unremarkable findings on physical examination, and an ECG that is either difficult to interpret or has normalized at presentation.

MAIN BODY: Optimal diagnostic modality to identify patients with acute coronary syndrome in emergency settings should be quick, noninvasive, cost-effective and readily available.

Coronary computed tomography, coronary angiography can provide high-quality images of the heart and coronary vasculature. Coronary CTA provides accurate information about the degree of stenosis as well as certain characteristics of plaque, associated with a higher risk of future ACS. Additionally, coronary CTA allows evaluation of important noncoronary cardiac findings- such as acute aortic syndrome and pulmonary embolism.

CONCLUSION: Cardiac computed tomography is a very useful diagnostic modality in selected patients with acute chest pain in emergency settings.

Keywords: *acute chest pain, acute coronary syndrome, cardiac computed*

NONVASCULAR, NONTRAUMATIC MEDIASTINAL EMERGENCIES

Nenkina TP

Department of Radiology, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

BACKGROUND: A less common cause for acute chest pain, often not recognized on time and with high mortality rate, is the group gathering of nonvascular, nontraumatic mediastinal emergencies. A variety of pathological conditions concerning different mediastinal structures is included in this slightly underestimated spectrum.

LEARNING POINTS: Diagnostic algorithm of mediastinal emergencies, some tips in differential diagnostics; complications estimated with imaging, effectiveness of possible surgical correction.

MAIN BODY: We will present a part of those life-threatening diseases including iatrogenically induced cases. A practical diagnostic imaging algorithm plus a range of imaging signs and clues will provide some tips in avoiding misdiagnosis. Considering some essential differential diagnosis could be vital for those critical patients in reducing early or delayed complications caused by postponed correct imaging interpretation. Last but not least, the optional therapeutic methods will be mentioned with an emphasis on the surgical procedures hand in hand with their imaging equivalent and efficiency estimation.

Keywords: *mediastinum, emergency, computed tomography*

MAGNETIC RESONANCE DIAGNOSTICS OF MUSCLE TRAUMA

Nikolov, II

Medical Center Spektar, Sofia, Bulgaria

BACKGROUND: Magnetic resonance imaging (MRI) is regarded as a method of choice for detection and evaluation of the severity of muscle injuries, for identifying the anatomic location, for predicting the outcome and assessing the therapeutic response.

The main advantages of MRI are: no ionizing radiation, multiplane visualization of the injured structures and brilliant soft tissue resolution.

LECTURES

MAIN BODY: The aim of this presentation is to give young radiologists the principles of using normal and compartmental anatomy, common and supplemental magnetic resonance imaging techniques in combination with the mandatory clinical knowledge /points of pain, mechanism of trauma and risk factors/ and thus to improve their diagnostic quality.

The general categories of muscle injuries like muscle strain and muscle contusion are discussed as well as the imaging grading of the latter.

Solutions of imaging problems, pearls and pitfalls are also presented.

References are indicated at the end of the lecture.

CONCLUSION: Magnetic resonance imaging (MRI) is regarded as method of choice for detection and evaluation of the severity of muscle injuries.

Keywords: *magnetic resonance, muscle strain, contusion*

GASTROINTESTINAL EMERGENCIES - SIGNS AND PITFALLS

Plachkov I

Department of Radiology, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

BACKGROUND: Gastrointestinal emergencies are among the most common causes for hospital admission with a high percentage of morbidity and mortality.

LEARNING POINTS: Suspected abdominal emergency sometimes presents a diagnostic challenge with different clinical presentation and various spectra of diagnostic tools. Radiograms, computed tomography and ultrasound are modalities of choice, not only for diagnosis but also for detection of complications.

MAIN BODY: The purpose of the presentation is to familiarize the audience with the basic imaging findings, signs and potential pitfalls of the CT examination in cases of intestinal obstruction, ischemia, bowel diverticulitis, etc.

CONCLUSION: The review will focus on some of the complications of the gastrointestinal emergencies and the differential diagnosis. It includes basic CT protocols for different scenarios.

Keywords: *gastrointestinal tract, emergency, imaging, computed tomography*

ENDOVASCULAR TREATMENT OF STROKE

Sirakov, SS

Imaging Diagnostics, University Hospital St. Ivan Rilski, Sofia, Bulgaria

BACKGROUND: The management of acute ischemic stroke has advanced greatly over the past two decades. New interventions, including intravenous and endovascular treatment strategies, have evolved to recanalize arteries and salvage the ischemic brain.

LEARNING POINTS: The evolution of interventional approaches to the treatment of acute stroke has been prompted by the limitations of intravenous therapy and intended to extend the treatment window, improve recanalization rates, and subsequently - long-term clinical outcomes.

MAIN BODY: We present our experience with endovascular treatment of stroke including the techniques, devices, and tips and tricks of mechanical thrombectomy.

CONCLUSION: We have to understand the meaning and benefits of endovascular treatment in stroke patients, compared to intravenous therapy alone, and start to develop well-organized stroke units in Bulgaria.

Keywords: *stroke, mechanical thrombectomy, endovascular treatment*

IMAGING OF ABDOMINAL VASCULAR EMERGENCIES

Stoynova, VV

Department of Diagnostic Imaging, Acibadem City Clinic Oncology Center, Sofia, Bulgaria

LEARNING POINTS: To discuss different non-traumatic vascular injuries and the most appropriate imaging strategy.

MAIN BODY: Acute vascular emergencies can arise from direct traumatic injury to the vessel or be spontaneous (non-traumatic). The vascular injuries can be arterial and venous. The findings of various types of vessel injuries include laceration with active hemorrhage, occlusion, and, for arteries, formation of pseudoaneurysm and dissection. Most of them are life-threatening emergencies, since they may cause an important hypovolemic shock or severe ischemia and require prompt diagnosis and treatment. In the different clinical scenarios, the correct diagnostic approach to vascular injuries is not firmly established and advantages of one imaging technique over the other are not obvious. Ultrasound is an easily accessible, safe and non-invasive diagnostic modality and is presently considered with the use of Doppler duplex sonography, the first-line examination for evaluation of vascular injuries.

CONCLUSION: Computed tomography with multiphasic imaging study is an accurate modality to evaluate the abdominal vascular injuries, quick to perform, non-invasive, readily available and able to visualize other anatomical structures simultaneously. Certainly, CT can be considered the primary imaging modality in a polytraumatic patient with suspicious vascular trauma.

Keywords: *abdominal vessels, aneurism, laceration, bowel ischemia*

THORACIC TRAUMA DUE TO A TRAFFIC ACCIDENT

Ilieva DM

Department of Diagnostic Imaging, St. Anna University Hospital, Sofia, Bulgaria

INTRODUCTION: A 42-year-old male was admitted to the ER after a traffic accident in an unconscious state and in a respiratory distress.

CASE PRESENTATION: A whole-body computed tomography (CT) was performed. It showed bilateral pneumothorax, pneumomediastinum, bilateral haemothorax, pulmonary contusions, and rib fractures.

Emergency bilateral thoracocentesis was performed and the patient was transferred to ICU for further treatment.

CONCLUSION: It is important to remember that multiple types of injury in a single patient may coexist and radiologists should not be distracted by depicting one type of trauma and neglect other coexisting or associated types of injuries.

Keywords: *thoracic trauma, pneumothorax, pneumomediastinum, rib fractures*

SIGMOID VOLVULUS COMBINED WITH HIATUS HERNIA

Dyakova GD, Teneva TG, Neshkinska MS, Balev BD

Department of Radiology, St. Marina University Hospital, Varna, Bulgaria

INTRODUCTION: Sigmoid volvulus is the most common form of gastrointestinal volvulus. A case of sigmoid volvulus combined with hiatus hernia is presented.

CASE PRESENTATION: An 81-year-old woman was admitted to the Surgery Department with a history of abdominal pain and distention for several days.

The woman arrived from another hospital where chest and abdominal X-rays had been performed. They showed the presence of dilated bowels with some of the bowel loops situated above the right hemidiaphragm. This raised the suspicion of a diaphragmatic rupture. The patient had no history of trauma.

On admission to our hospital, abdominal radiogram and computed tomography (CT) were performed. They revealed that the patient had sigmoid volvulus with dilation of the sigmoid colon and the typical “whirl sign” of the twisted sigmoid mesentery. A large hiatus hernia was also found. The entire stomach and a large part of the dilated sigmoid colon turned out to be herniated through the esophageal hiatus into the right hemithorax.

The patient underwent surgical detorsion of the sigmoid colon and sigmoidopexy. It was decided that the hiatus hernia should be repaired at a second stage when the patient is stabilized.

CONCLUSION: The dilated sigmoid colon in sigmoid volvulus may become herniated into the thoracic cavity when there is a preexisting hiatus hernia. Although a rare co-morbidity, this condition presents certain diagnostic difficulties. Abdominal X-ray and CT have proven to be valuable methods to establish the right diagnosis.

Keywords: *sigmoid volvulus, hiatus hernia*

COMPUTED TOMOGRAPHY ANGIOGRAPHY IN TYPE I ACUTE AORTIC DISSECTION COMPLICATED WITH VISCERAL MALPERFUSION

Eneva MI

Department of Diagnostic Imaging, University Hospital St. Ekaterina, Sofia, Bulgaria

INTRODUCTION: Malperfusion is one of the most common life-threatening complications of acute aortic dissection. If arterial obstruction persists, it can progress to malperfusion syndrome - end-organ malfunction with infarction. This significantly increases the risk of mortality. Depending on the morphological characteristics of dissection, the pattern of obstruction can be classified as dynamic, static or combined. The choice of imaging modality can be quite challenging. CT-angiography is the modality of choice in an emergency setting as it provides the desired anatomical details as well as great spatial and temporal resolution.

CASE PRESENTATION: The aim of this report is to review the important CT signs of malperfusion and illustrate the different mechanisms by presenting different cases of type I acute aortic dissection, complicated with malperfusion.

CONCLUSION: Early diagnosis and intervention for visceral ischemia is crucial. Different treatment strategies have been developed, depending of the characterization of the extent of malperfusion. Thus, it is important that radiologists are familiar with this complication of aortic dissection and are able to convey essential information to the clinician.

Keywords: *computed tomography, angiography, acute aortic dissection, malperfusion syndrome*

PSEUDOMEMBRANOUS COLITIS

Georgieva SV, Nedevska M, Zlatareva DK

Department of Radiology, University Hospital Alexandrovska, Sofia, Bulgaria

INTRODUCTION: Pseudomembranous colitis, also known as a *Clostridium difficile* colitis is a potentially life-threatening acute infectious colitis. This colitis results from the effects of toxins produced by the overgrowth of *Clostridium difficile*, usually as a result of broad-spectrum antibiotic therapy. Pseudomembranous colitis is characterized endoscopically by yellowish plaques forming pseudomembranes on the colonic mucosa.

CASE PRESENTATION: We are presenting a case of a 68-year-old woman who came to the Emergency Department in our hospital, complaining of abdominal tenderness, episodes of diarrhea, nausea and vomiting. She had elevated white blood cell count. The plain radiographic findings were not specific. The contrast-enhanced CT played a key role in establishing the diagnosis. The CT findings included: wall thickening of the entire colon with intense enhancement of the mucosa and extensive hypodensity of the submucosal layer due to oedema. Ascites was also present. The diagnosis of pseudomembranous colitis was later confirmed by the presence of toxins in stool assays. Very often, like in our case, *Clostridium difficile* colitis may present with symptoms suggestive of acute abdomen, which can lead to unwarranted laparotomy.

CONCLUSION: CT has been used increasingly in recent years for the evaluation of acute abdominal diseases. CT can be very helpful in suggesting the diagnosis of pseudomembranous colitis and thus avoid unwarranted laparotomy.

Keywords: *pseudomembranous colitis, computed tomography*

INFECTED ENDOGRAFT WITH PERIGRAFT ABSCESS, GRAFT-ENTERIC FISTULA FOLLOWING ENDOVASCULAR REPAIR OF LERICHE'S SYNDROME

Mladenova NB, Kirova GI

Department of Radiology, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

INTRODUCTION: Perigraft infection with a development of a graft-duodenal fistula is one of the most serious complications following aortic surgery. It is a dangerous complication resulting in prosthesis infection and unavoidable bacteremia.

CASE PRESENTATION: A 39-year-old man with Leriche's syndrome presented with high fever, erythema, edema and soreness in both inguinal folds, where prior femoral incisions are seen. Five years earlier the patient underwent vascular reconstruction with an aortobifemoral (ABFB) and axillofemoral by-passes to treat the diagnosed Leriche's syndrome. Blood tests demonstrated a severe septic condition and therefore a computed tomography angiography (CTA) was performed. On the CTA, concentric, around the entire length of the crossover prosthesis, abscess cavity with liquid-equivalent contents and gas collections was formed. An infiltrate is also present around the ABFB at the level of the external iliac artery in the structure of the psoas muscle. After further peroral administration of contrast media, a fistula between the duodenum and the thrombosed aortobifemoral prosthesis was detected. The periprosthetic abscesses were drained, all of the infected prostheses were removed and an autogenous patch of the left axillary artery was placed. The integrity of the duodenum was restored surgically through gastrointestinal and intestinal anastomoses. Intravenous antibiotic therapy was started. The patient showed stable vital signs after the removal of the by-passes.

CONCLUSION: A secondary graft-enteric fistula with periprosthetic abscess is recognized as a fatal complication after vascular reconstruction of Leriche's syndrome. Fistula was formed between the vascular prosthesis and the duodenum with a septic condition of the patient. Survival can only be achieved by complete surgical removal of the infected artificial prosthesis and closure of the fistulas.

Keywords: *Leriche's syndrome, perigraft abscess, graft-enteric fistula*

CASE SERIES OF EMERGENCY CONDITIONS WITH A DRAMATIC ONSET: A DIAGNOSTIC DILEMMA

Panova ED

Department of Radiology, Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

INTRODUCTION: This presentation reports a case series of patients, who share similar medical history/treatment and have common radiographic findings. The objectives of the study include presenting the etiological, clinical and radiographic features of the indicated condition, as well as discussing differential diagnosis and treatment approach.

CASE PRESENTATION: We observed a series of five patients, all presenting with acute abdominal pain, low haemoglobin levels and prolonged activated partial thromboplastin time. Clinical history and imaging findings were discussed. Urgent high-quality computed tomography examination was mandatory to confirm the diagnosis.

CONCLUSION: Despite the mostly favorable prognosis and rare occurrence in medical practice, some cases of the presented condition might have a fatal outcome. Therefore, it is crucial to be able to recognize its clinical manifestation, confirm the diagnosis and propose a suitable therapeutic approach.

Keywords: *acute abdominal pain, femoral nerve, acute anemia, retroperitoneal hematoma, retroperitoneal tumor*

OSMOTIC DEMYELINATION SYNDROME

Popova RD, Kalchev EB, Valchev GN, Kaloyanova DV, Teneva TG, Balev BD

Department of Radiology, St. Marina University Hospital, Varna, Bulgaria

INTRODUCTION: Osmotic demyelination syndrome is a state of acute demyelination due to rapid shifts in serum osmolality. The entity was formerly called central pontine myelinolysis, for the demyelination process most typically affects the central pontine white matter with sparing of the periphery. However, it can also affect the cerebral and cerebellar white matter, formerly called extrapontine myelinolysis. Predisposing conditions include alcoholism, rapid correction of hyponatremia, hypernatremia, liver failure, organ transplantation, extensive burns, malnutrition and hyperosmolar hyperglycemia.

CASE PRESENTATION: A 39-year-old, obese woman was admitted to the Regional Hospital after sudden development of abdominal pain and vomiting. She was diagnosed with incarcerated paraumbilical hernia. An emergency laparotomy was performed with resection of approximately 1.5 m partially necrotic intestine. The patient had a previous history of 2 years with polydipsia and polyuria postpartum and was diagnosed with partial diabetes insipidus. For these complaints she received medical therapy, ceased in the early postoperative period. After the operation, the patient developed progressive impairment of consciousness and a rise of sodium levels, necessitating admission to the ICU. Acute toxic-metabolic encephalopathy was suspected and rapid correction of the serum sodium was performed. A day later the patient was transported to the ICU in our hospital. The serial comput-

ed tomography (CT) examinations revealed hypodensity of the corpus callosum and the central pons. MRI was contraindicated for the presence of surgical clips.

CONCLUSION: Our patient had typical imaging findings of osmotic demyelination syndrome consisting of hypodensity in the central pontine region and in the corpus callosum.

Keywords: *osmotic demyelination syndrome, computed tomography*

FISTULA AS COMPLICATION OF ADVANCED RECTAL CANCER T3/T4, GRADE G2, DIAGNOSED WITH CONTRAST-ENHANCED COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING

Teneva TG¹, Zlatarov AK², Dyakova GD¹, Valchev GN¹, Balev BD¹

¹*Department of Radiology, St. Marina University Hospital, Varna, Bulgaria*

²*Department of General and Operative Surgery, St. Marina University Hospital, Varna, Bulgaria*

INTRODUCTION: Patients with rectal cancer may suffer complications, such as rectal fistulas at various stages of diagnostics and treatment. Some present initially with complicated advanced disease. In other cases fistulas are developed after chemo-radiotherapy and/or surgery. The causes of these complications include malignant infiltration and inflammatory changes. Various imaging modalities are used to precisely diagnose the initial stage of the tumour, and to detect the complications of advanced cancer.

CASE SERIES PRESENTATION: We present a case series of five patients with fistulas due to advanced rectal cancer. All five patients are with locally advanced cancer stage T3 and T4; with histological grade G2; all of them underwent contrast-enhanced computed tomography (CECT) and magnetic resonance imaging (MRI) of the pelvis for initial diagnosis and follow-up before and after treatment for fistula. All of them had adjuvant or neoadjuvant chemo-radiotherapy and only one of them underwent surgery. The complications were communication fistulas – rectovaginal, rectovesical, rectosacral and rectocutaneous fistulas and we will present one case of postoperative presacral abscess with fistula.

CONCLUSION: Various imaging modalities are used for diagnostics, staging and planning of the treatment of rectal cancer. Both magnetic resonance and computed tomography are excellent imaging tools in the management of rectal neoplasia. The morphologic criteria for investigation/imaging of rectal cancer in the setting of advanced disease are: presence and contrast enhancement of tumour tissue, diameter and volume of cancer, infiltration and extent of tumour tissue and following complications with the most common being fistulas.

Keywords: *rectal cancer, adjuvant/neoadjuvant radiotherapy, complications, computed tomography*

MANAGEMENT ISSUES IN EMERGENCY RADIOLOGY

Prof. Peter Mildenberger

(University Mainz)

The presentation will demonstrate actual concepts of how to manage polytrauma patients within an interdisciplinary team. The role of radiology and the radiologist will be highlighted. One of the main goals of such concepts is reducing time to imaging. This requires direct access to CT and appropriate infrastructure for managing such complex emergency cases. There is no doubt that formalised concepts and continuous training together with all team members is a key factor for the successful implementation of emergency radiology.

PRESENTATION ON ESR

Prof. Peter Mildenberger

(Chair of the ESR Subcommittee on Professional Issues and Economics in Radiology)

The presentation provides an overview of all major activities of the European Society of Radiology (ESR), including facts and figures about the Society, its educational and scientific schemes, membership benefits and its annual meeting, the European Congress of Radiology (ECR). More detailed information about ECR 2018 (February 28-March 4, 2018, Vienna, Austria) will be provided, including interesting features for radiologists, radiographers and physicists in training. In addition, the involvement of Bulgarian radiologists in the ESR and the ECR will be outlined.

ESR RESIDENTS

Tsvetelina Teneva¹, Robert Gruenkranz²

¹Member of the ESR Radiology Trainees Forum Subcommittee Board

²European Society of Radiology

The presentation provides an overview of some major activities of the Radiology Trainees Forum- the ESR organization for residents. It includes facts about RTF activities, its educational and research schemes and membership benefits. The presentation will focus on the ESR e-learning platform- Training Curriculum, European Diploma in Radiology, European School of Radiology and its annual courses. Other important topics are about the case and poster databases (EURORAD and EPOS) and about the Invest in the Youth Programme- a programme that each year supports young radiologists with free abstract submission and free attendance at the European Congress of Radiology. In addition, the involvement of Bulgarian residents in the RTF will be outlined.

WORKSHOP – TIPS AND TRICKS IN CARDIAC AND VASCULAR EMERGENCY

Galina Kirova

Acibadem City Clinic Tokuda Hospital, Sofia, Bulgaria

BACKGROUND: The workshop will illustrate the wide variety of CT/MRI findings in cardiac emergency, based on the presentation of several clinical cases and situations. Analysis will be provided according to the recent guidelines and the author's personal experience in a cardiovascular centre. CT/MRI findings will be described and correlated with pathologic features, therapeutic consequences, knowledge of which will allow faster and better interpretation of images.

LEARNING POINTS:

- To demonstrate the advantages and disadvantages of the different imaging modalities in the diagnostic workup of cardiac and vascular emergency;
- To discuss the value of an appropriate diagnostic algorithm in different clinical scenarios;
- To explain the difference between aortic dissection (AD), intramural hematoma (IMH), penetrating atherosclerotic ulcer (PAU) and acute aortic rupture (AAR);
- To present the characteristic CT findings for each entity and the wide spectrum of findings that the radiologist must be able to recognize in order to correctly direct treatment management and allow risk stratification of patients with AA syndrome.

Keywords: *emergency, vascular pathology, computed tomography angiography, magnetic resonance angiography, radiology report*

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GENERAL INFORMATION: Scripta Scientifica Medica publishes articles aimed to provide the most current information in various medical fields. The following types of articles are approved for publication:

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participants in the study. Should also give details of the numbers and descriptions of patients, participants of samples in the study and detailed information about treatment, intervention, technique or procedure.

Results: should be summarized with relevant statistical indices, following the requirements for tables and figures.

Discussion: must review the relevant literature on the subject and discuss the findings of the current study in their differences and similarities.

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Pages should be single-spaced, Times New Roman should be used throughout, sized at 12 pt. Captions should be used within the body of the manuscript to outline important points. The text of the manuscript should be submitted in Microsoft Word .doc/.docx format.

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Zhang M, Holman CD, Price SD, Sanfilippo FM, Preen DB, Bulsara MK. Comorbidity and repeat admission to hospital for adverse drug reactions in older adults: retrospective cohort study. *BMJ.* 2009 Jan 7;338:a2752. doi: 10.1136/bmj.a2752. PubMed PMID: 19129307; PubMed Central PMCID: PMC2615549

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