

Assessment of Ionizing Radiation Exposure Risk and Health Implications for Orthopedic Operating Room Personnel

Bensekhria Nardjesse

Assistant Professor in occupational Medecine
Faculty of Medecine
University of Batna 2
Fesdis, Batna, Algeria
n.bensekhria@univ-Batna2.dz

Wissal Benhassine

Professor in occupational Medecine
Faculty of Medecine
University of Batna 2
Fesdis, Batna, Algeria
w.benhasine@univ-batna2.dz

Abstract

Introduction: Interventional radiology procedures conducted on a daily basis in orthopedic operating theaters often fail to provide adequate protection for those involved. **Issues and Objectives:** The case of Mr. ZR, a 40-year-old anesthetist working in the orthopedic block, has raised concerns about potential health risks associated with prolonged exposure to ionizing radiation sources (IR). Although this risk is not explicitly listed as an occupational hazard in Table 6, we believe that a comprehensive survey is necessary to assess exposure levels and identify any similar cases. **Method:** Our investigation involved a two-fold approach, consisting of a desk study that analyzed the activities in the orthopedic block, and an exceptional periodic survey of all staff members who were exposed to IR in the operating theaters. **Results:** The survey revealed that surgical staff were at risk of IR exposure due to the use of the "scopy" in surgical procedures. Personal protective measures were insufficient, as the number of exposed caregivers outweighed the measures that were in place. Furthermore, other protective measures were notably absent. The medical examinations of the operating room staff showed that 65% of them had pathologies commonly associated with IR exposure, including hypochromic microcytic anemia, thrombocytosis, thyroiditis, nodular thyroid gland, and a case of bilateral cataract. One anesthetist was even diagnosed with thyroid cancer, which prompted this analysis. **Conclusion:** Establishing a definitive causal relationship between the encountered pathologies and the emitted IR in the orthopedic block presents significant challenges. Nonetheless, our investigation highlights the importance of conducting comprehensive surveys to assess the potential risks associated with IR exposure in orthopedic operating theaters.

Keywords

Interventional radiology, Ionizing radiation, Orthopedic block, Occupational exposure, Health risks.

Biographies

Dr. Bensekhria Nardjesse is a medical doctor with a doctoral degree in medicine. Since 2015, she has held the position of Assistant Professor in Occupational Medicine. She is currently pursuing her doctoral research in the field

of objective assessment of physical workload among healthcare providers. Her research focuses on utilizing posture and heart rate measurements, as well as implementing the World Health Organization's Workload Indicators of Staffing Need (WISN) method. She is responsible for the exploratory unit within the Occupational Medicine Department at CHU Batna. Additionally, she is actively involved in teaching and research activities at the Faculty of Medicine in Batna. Currently, she is a member of a research project investigating the organization of work in emergency services and its effects on employee well-being and patient safety.

Benhassine Wissal is MD, PhD and Professor in Occupational Medicine; she graduated from universities of Constantine and Batna 2. She is ergonomic graduated from university of Tlemcen, Algeria. She is a teacher-researcher at the Faculty of Medicine of Batna where she contributes to the training of medical students. She trains specialist doctors in Occupational Medicine. She is the head doctor of the occupational medicine department at the university hospital center of Batna Algeria where she set up an occupational pathology unit and installed a occupational mental health consultation. She conducts research in the field of mental health at work, the organization of work in healthcare structures and emergency services, the diagnosis and monitoring of work-related musculoskeletal disorders, mainly back pain. She is an expert doctor for the social insurance funds of three Wilayas. Currently, she is working on a research project on the work organization of Emergency Services and its impact on employee well-being and patient safety.