

Imaging of Ballet Artists' Hip Joint Pathology (Literature Review)

V. A. Nechaev¹, A. Yu. Vasil'ev^{2,3}

¹ City Clinical Hospital № 4 of Moscow Healthcare Department

² Moscow State University of Medicine and Dentistry named after A. I. Evdokimov, Ministry of Healthcare of Russia, Department of Radiology

³ Central Research Institute of Radiation Diagnostics, Moscow

Abstract

Hip joint plays an important role in performing of various ballet movements and the amplitude of movements in him is much higher than in people of other professions, which affects his physiological state. Dancers often complain of pain in the hip joint, medical imaging are used in the diagnosis of the causes of which. The role of high-tech methods of medical imaging, including magnetic resonance imaging and computed tomography, is becoming more significant in the diagnosis of hip joint pathology in ballet dancers, while standard radiography remains the first-line technique. This review highlights the most common pathological conditions of hip joints among the ballet dancers.

Key words: Radiography, Computed Tomography, Magnetic Resonance Imaging, Ultrasound, Ballet Artist, Hip Joint Pathology.

References

1. Karpenko A. K., Kubacheva K. K., Dutova I. N. Ischiofemoral impingement syndrome – the role of MRI in the age aspect. *Luchevaya diagnostika i terapiya*. 2017. V. 8. No. 3. P. 56–57 (in Russian).
2. Andersson S., Nilsson B., Hessel T. et al. Degenerative joint disease in ballet dancers. *Clin. Orthop. Relat. Res.* 1989. V. 238. P. 233–236.
3. Assassi L., Magnenat-Thalmann N. Assessment of cartilage contact pressure and loading in the hip joint during split posture. *Int. J. Comput. Assist. Radiol. Surg.* 2016. V. 11. No. 5. P. 745–756.
4. Avrahami D., Pajaczkowski J. A. Femoral neck stress fracture in a female athlete: a case report. *J. Chiropr. Med.* 2012. V. 11. No. 4. P. 273–279.
5. Bolia I., Chahla J., Locks R. et al. Microinstability of the hip: a previously unrecognized pathology. *Muscles Ligaments Tendons J.* 2016. V. 6. No. 3. P. 354–360.
6. Charbonnier C., Kolo F. C., Duthon V. B. et al. Assessment of congruence and impingement of the hip joint in professional ballet dancers: a motion capture study. *Am. J. Sports Med.* 2011. V. 39. No. 3. P. 557–566.
7. Chow A. H. L., Morrison W. B. Imaging of hip injuries in dancers. *J. Dance Med. Sci.* 2011. V. 15. No. 4. P. 160–172.
8. Duthon V. B., Charbonnier C., Kolo F. C. et al. Correlation of clinical and magnetic resonance imaging findings in hips of elite female ballet dancers. *Arthroscopy*. 2013. V. 29. No. 3. P. 411–419.

9. *Harris J. D., Gerrie B. J., Varner K. E. et al.* Radiographic prevalence of dysplasia, cam, and pincer deformities in elite ballet. *Am. J. Sports Med.* 2016. V. 44. No. 1. P. 20–27.
10. *Kiolan B. R., Carcia C. R., Christoforetti J. J., Martin R. L.* Comparison of range of motion, strength, and hop test performance of dancers with and without a clinical diagnosis of femoroacetabular impingement. *Int. J. Sports Phys. Ther.* 2016. V. 11. No. 4. P. 527–535.
11. *Kolo F. C., Charbonnier C., Pfirmann C. W. et al.* Extreme hip motion in professional ballet dancers: dynamic and morphological evaluation based on magnetic resonance imaging. *Skelet. Radiol.* 2013. V. 42. No. 5. P. 689–698.
12. *Mayes S., Ferris A. R., Smith P. et al.* Atraumatic tears of the ligamentum teres are more frequent in professional ballet dancers than a sporting population. *Skelet. Radiol.* 2016. V. 45. No. 7. P. 959–967.
13. *Mayes S., Ferris A. R., Smith P. et al.* Professional ballet dancers have a similar prevalence of articular cartilage defects compared to age- and sex-matched non-dancing athletes. *Clin. Rheumatol.* 2016. V. 35. No. 12. P. 3037–3043.
14. *Mayes S., Ferris A. R., Smith P. et al.* Similar prevalence of acetabular labral tear in professional ballet dancers and sporting participants. *Clin. J. Sport Med.* 2016. V. 26. No. 4. P. 307–313.
15. *Mayes S., Ferris A. R., Smith P. et al.* Bony morphology of the hip in professional ballet dancers compared to athletes. *Eur. Radiol.* 2017. V. 27. No. 7. P. 3042–3029.
16. *Mitchell R. J., Gerrie B. J., McCulloch P. C. et al.* Radiographic evidence of hip microinstability in elite ballet. *arthroscopy.* 2016. V. 32. No. 6. P. 1038–1044.
17. *Robertson G. A., Wood A. M.* Lower limb stress fractures in sport: Optimising their management and outcome. *World J. Orthop.* 2017. V. 18. No. 8. P. 242–255.
18. *Teitz C. C., Kilcoyne R. F.* Premature osteoarthritis in professional dancers. *Clin. J. Sport Med.* 1998. V. 8. No. 4. P. 255–259.
19. *Trentacosta N., Sugimoto D., Micheli L. J.* Hip and groin injuries in dancers: a systematic review. *Sports Health.* 2017. V. 9. No. 5. P. 422–427.
20. *Turner R., O'Sullivan E., Edelstein J.* Hip dysplasia and the performing arts: is there a correlation? *Curr. Rev. Musculoskelet. Med.* 2012. V. 5. No. 1. P. 39–45.
21. *Van Dijk C. N., Lim L. S., Poortman A. et al.* Degenerative joint disease in female ballet dancers. *Am. J. Sports Med.* 1995. V. 23. No. 3. P. 295–300.
22. *Weber A. E., Bedi A., Tibor L. M. et al.* The hyperflexible hip: managing hip pain in the dancers and gymnast. *Sports Health.* 2015. V. 7. No. 4. P. 346–358.

Authors

Vasil'ev Alexander Yurievich, M. D. Med., Corresponding Member of the Russian Academy of Sciences, Professor, Head of Central Radiology Institute, Professor of Department of Radiology of Moscow State Medical University of Medicine and Dentistry named after A. I. Evdokimov, Ministry of Healthcare of Russia.
Address: 9a, ul. Vucheticha, Moscow, 127206, Russia.
Phone number: +7 (495) 611-01-77. E-mail: auv62@mail.ru

Nechaev Valentin Aleksandrovich, Ph. D. Med., Radiologist of Department Radiology of City Clinical Hospital № 4 of Moscow Healthcare Department.
Address: 25, ul. Pavlovskaya, Moscow, 115093, Russia.
Phone number: +7 (499) 426-18-87. E-mail: dfkz2005@gmail.com