

Conclusions

- The treatment of thoracolumbar burst fractures must be individualized.
- Canal compromise from retropulsed bone fragments is not in itself an absolute indication for surgical decompression.

ABSTRAKT

PHOTODYNAMIC THERAPY OF FEMORAL HEAD ASEPTIC NECROSIS

M. DUDIN¹⁾, S. KURCHENKO¹⁾, A. SHASHKO¹⁾, V. PECHERSKIY²⁾

¹⁾ Children's Rehabilitation Center of Orthopedics and Traumatology „Ogonyok”, Saint Petersburg, Russia

²⁾ Child's Orthopedics Center “Rodnik”, Perm, Russia

Aseptic necrosis of the femoral head (Legg-Calvé-Perthes disease) is a form of osteochondritis of the hip joint and develops mainly in children aged 3–9 years, being one of the most common causes of their disability. Treatment of these patients require long-term (3–4 years) unloading of the affected joint, which does not exclude, however, the probability of resistant strains developing and its biomechanical violations. The purpose of this study was to investigate the possibility of affected joints restoration shortening with photodynamic therapy.

Photodynamic effect lies in the exciting action of a specific wavelength of light in the pre-entered and accumulated in the pathological tissue photosensitizer. As a result of this interaction is a photochemi-

cal reaction, accompanied by local generation of singlet oxygen and free radicals. Sufficient concentration of these substances leads to the destruction of abnormal cells. It is important to note that the photosensitizer selectively accumulates in tissues with high proliferative activity (tumors, foci of inflammation, etc.) In clinical practice, photodynamic therapy has long been successfully used to treat cancer. For the purpose of aseptic necrosis treatment this method was used by us for the first time.

The study group included children of both sexes in the II and III stages of the disease. Photosensitizer “Photoditazin[®]” (N-dimethylglucamine salt of Chlorine E6) in the form of 0.3% gel-penetrator was applied to the skin of the thigh in the projection of the femoral head and greater trochanter. After a 2-hour exposure these areas were irradiated by a laser with a wavelength of 661 ± 1 nm and a power of 2.0 W in continuous mode with a dose of 150 J/cm² for 10–15 minutes. The procedure was carried out 1–2 times at intervals for at least 2 months. In addition, all patients performed a complete unloading of the affected joints and underwent a combined treatment: electrophoresis of Calcium and Phosphorus (to the area of the affected joint) and Ascorbic acid (at the lumbar spine), magnetotherapy with constant magnetic field to the area of the affected joint, oral Calcium supplementation, exercises and massage.

At the moment we have applied this technique in more than 100 patients. As a result treatment time was reduced to 1.5–2 years by reducing the duration of necrosis and fragmentation stages and recovery process acceleration, that was confirmed by radiographic studies.