FEDERATION INTERNATIONALE DE GYMNASTIQUE

INFORMATION MÉDICALE

MEDICAL INFORMATION

LES INJECTIONS LOCALES EN PRATIQUE MEDICALE CHEZ LE GYMNASTE "INJECTIONS ANESTHÉSIQUES, GLUCOCORTICOSTÉROÏDES LOCALES ET POLICE « PAS D'AIGUILLE »"

MEDICAL PRACTICE OF LOCAL INJECTIONS IN GYMNASTICS "LOCAL ANESTHETIC INJECTIONS, LOCAL GLUCOCORTICOSTEROID INJECTIONS AND "NO-NEEDLE" POLICY"

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Par le / By
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MEDICAL PRACTICE OF LOCAL INJECTIONS IN GYMNASTICS

. **Local anesthetic injections**
. **Local glucocorticosteroid injections**
. **"No-needle" policy**

Some sports physicians commonly resort to local injections as an immediate solution to alleviate **painful local injuries** and the **inflammatory process that restrict the gymnasts** they oversee.

It is worthwhile to evaluate the risks of this practice and define the indications for its use. Experience has taught us that these types of injections should be administered far less frequently than seen in reality. It is too often an easy way out that seldom solves the situation in the end. Because pain and inflammation are the consequences of a problem, we need to go to the root of it to isolate its anatomical, mechanical, or technical cause.

We have to make a distinction between two categories of products commonly used in sports medicine, either alone or sometimes in combination:

- **Local anesthetic injections,** to be used only under exceptional circumstances and special cases only, and
- **Corticoids,** to be limited to specific situations and not employed repeatedly as a major or sole treatment for ligament, muscular, or articular conditions.

Other products, such as hyaluronic acid, may be considered for local injections, especially for intra-articular use, but HA is rarely utilised in sports, especially where young and high-level athletes are concerned.

LOCAL ANESTHETIC INJECTIONS

INDICATIONS

These types of anesthetics are justifiably used to reduce the pain from another injection such as epidural or foraminal injection. They may also be used to provide relief during the exercise by eliminating or temporarily numbing a pain at the joint, muscular or tendon level.

RISKS & UNDESIRABLE SIDE EFFECTS

The purpose of local anesthetics is to provide relief, but we should always take the various aspects of pain into consideration, because pain in itself is a warning signal. We should remember that a local anesthetic could:

- disrupt kinesthetic and muscular sensitivity as well as the proprioception mechanisms, which are essential to the mastery of movement as well as to motion control within the context of safety;
- disturb tactile sensitivity, which plays an important role in motor coordination,
- cause a severe allergic, anaphylactic shock-like reaction.

USE

The adverse effects expressed above show that neurophysiological mechanisms, which are necessary to the mastery of movements in gymnastics, could be seriously disrupted and make the exercise dangerous.

It follows that local anesthetic injections should be strongly discouraged or even banned during training or competition. Exceptions to this rule are limited to just a few areas (such as the rib cage).

FIGHT AGAINST DOPING

Lidocaine-, procaine-, mepivacaine-type local anesthetics are not included in the WADA/FIG list of prohibited substances.

LOCAL INJECTIONS OF GLUCOCORTICOIDS

INDICATIONS - USE

In gymnastics, glucocorticoids are frequently used in ligamentous, muscular, or osteo-articular pathologies and sports traumatology, in particular for the following indications:

- tendinopathies, bursitis
- canal syndromes (tarsal, carpal, guyon, etc)
- mechanical arthropathies
- sequela of capsular ligament injuries
- sequela of musculotendinous injuries

These injections may be

- intra- or extraarticular
- peri- or intratendinous
- muscular
- etc.

They have been used for almost all disorders concerning the joints, muscles, tendons, and serous bursas.

RISKS – HARMFUL AND UNDESIRABLE EFFECTS

- Effect on **cartilage**: Intra-articular injections make it possible to strengthen the synovial membrane and to prevent hydrolysis, but their steroidal effect on **the metabolism of chondrocytes** inhibits the production and formation of the cartilaginous matrix**.** The injected substance is even more harmful when the injection is repeated and the concerned cartilage is in full growth.

- Delay in the formation of scar tissue: corticosteroids inhibit collagen production in the granular stratum and impede post-traumatic cicatrisation or scar formation, specifically if the substance is injected in soft tissues.

- Intratendinous injections cause calcification and ruptures, especially when administered repeatedly. They should preferably be prohibited and replaced with peritendinous injections.

- The lipolytic properties of corticosteroids may lead to a decrease of subcutaneous fat, with some cutaneous atrophy and a local loss of pigmentation.

- Injections in the serous bursa may cause a loss or a decrease of the adipose panicle and aggravate the bursitis.

- The injection of corticosteroids may favor or spread an infective agent.

- Microcrystalline arthropathies may occur with the use of some corticoids.

- There is a risk of suprarenal deficiency with a braking effect on the hypothalamic-suprarenal axis. This risk seems to be linked to the injection area, the number of injections, the corticoid’s dosage and solubility, or even the sensitivity of the patient.

THE VARIOUS TYPES OF INJECTIBLE CORTICOSTEROIDS

Betamethasone
Cortivazol
Prednisolone acetate
Hydrocortisone acetate
Methylprednisolone
Triamcinolone acetate
Triamcinolone hexacetonide
Etc...

LIMITATIONS AND USE CAUTION

- Avoid (or limit) intra-articular and intratendinous injections, especially with respect to tendons carrying body weight or supporting major loads (Achilles' and patellar tendons, and especially in gymnastics, the tendinous and joint areas of the wrist, the elbow, and the shoulder). The substance should preferably be administered in the periarticular and peritendinous areas.

- Proscribe or prohibit injections at the physis or in growing articulation zones.

- Limit the injections in a given zone to a small number per year, spacing them by at least 3 to 4 weeks.

- After an injection, a minimum rest period of 5 to 7 weeks should be prescribed, if possible.

- Adopt strict sterilization procedures.

- In order to prevent cutaneous atrophic reactions, use insoluble preparations (for example triamcinolone) for deep injections (serous bursas) and soluble preparations (such as hydrocortisone) for superficial areas.

- Avoid hexacetonide and triamcinolone acetonide to reduce the risks of microcrystalline arthropathies.

GLUCOCORTICOSTEROIDS AND FIGHT AGAINST DOPING

The indirect side effects of glucocorticoids on performance could be due to their systemic, anti-inflammatory, metabolic (increase of the stock of muscular glycogen), antalgic or euphoric action.

Local injections or any other topical form do not affect performance, but urinary elimination of the product and its metabolisms could be similar to the one produced by systemic administration (through bones, IM).

Since January 2009, an application for therapeutic use exemption is no longer required. A simple declaration or use (DOU) is sufficient for intra-articular, periarticular, peri-tendineous, peridural, or intradermal injections of corticosteroids.

Comments: the aim of this "no-needle" rule is to prohibit the use of injections to administer drugs or substances without a clear and recognized medical indication (i.e. vitamins, enzymes, cofactors, sugars, amino-acids, proteins, anti-oxidants, etc.). In particular, it refers to injections aimed at improving and speeding up recovery or decreasing fatigue. Late corticoids injections may also be linked to these methods, recognized as bad medical practice.

These rules apply to all FIG recognized events. Prohibition begins 24h before the first competition and finishes 24h after the end of the last competition in which the gymnast takes part.

The notion of "beginning and end of competition*" in gymnastics is more like the notion of "beginning and end of contest" with several alternatives based upon the disciplines and formats of competition. Therefore, the rule shall apply based upon these alternatives and the principle and spirit which led to its approval.*

Rule

The injection of any substance to any site of a gymnast's body is prohibited during any FIG recognized event in the period running from 24h before the start of the event and 24h after the end of the last competition in which the gymnast takes part. This prohibition relates to all substances, listed or not in the WADA Prohibited List.

The only exemptions must comply with the following principles and conditions:

1. The injection must be medically justified based on latest recognized scientific knowledge and evidence based medicine for the medication and route of administration;
2. Justification includes physical examination and appropriately documented diagnosis by a certified medical doctor ;
3. There is no alternative treatment without injection available;
4. The injection must respect the manufacturer-approved indication of the medication;
5. The injection must be administered by a certified medical professional;
6. Except when received during hospital treatment or clinical examination the injection must be reported immediately and in writing not later than 12 hours afterwards to the FIG Doctor or his representative, and in case of absence via email to michel.leglise@ffgym.fr and csteiner@fig-gymnastics.org or fax +41 21 321 55 19;
7. The report must be made by the medical doctor having examined the gymnast and must include the confirmation that a physical examination took place, the diagnosis, medication (name and substance), route of administration (intravenous, intramuscular, intraarticular, periarticular, peritendinous, epidural, intradermal, subcutaneous, etc) and dose;
8. In case of a local injection of glucocorticosteroids, which is subject also to the Anti-Doping Rules and the Prohibited List, the gymnast must rest and is prevented from competing for 24 hours.
   The medical doctor having prescribed the injection shall prescribe this rest in writing to the gymnast who will sign the prescription for approval.

Regarding any other prohibited substance, a Therapeutic Use Exemption remains required as per the usual procedure.
Any violation of the rules above may lead to disciplinary proceedings by the competent FIG authorities.

CONCLUSION

The systematic use of local corticosteroids injection (infiltration) "because of a painful joint", or "because training and participation in competitions must continue at any price", is not the best therapy or best medicine. Yet it is too often the case in gymnastics. As we have learned, this method is not without short- or long-term consequences for the gymnast.

It is an easy, **passive** solution to reach a quick and often temporary result. As a palliative measure, it takes into consideration the consequences of an ailment but brushes off its cause. It ignores that an articular injury needs time to heal and cicatrize or scar and that a chronic ailment requires a diagnosis and the treatment of the cause.

A**ctive** in-depth therapy may be long and difficult but is often required. It entails a period of suitable rehabilitation or physiotherapy, in conjunction with a physical and technical preparation specific to training

As a practical matter and except for particular counter-indications, the use of infiltration is sometimes used within a few days before a major competition, but one must weigh the risks to the athlete against the "interests of sports" – with health considerations always being the priority.

Then there is also the **ethical** problem. On his own or under the influence of the coach, if the physician recommends a treatment that is not in the best interest the athlete, but solely for training and competing, then it is unethical. Everyone should reasonably assess sports interests in relation to medical and even psychological interests.

Conversely, it is not reasonable to adopt an attitude of denial towards the use of infiltration based on misinformed medical arguments.

Once again, a careful examination of every case with its ethical, medical, and sport ramifications, will guide the choice.

Dr. Michel LEGLISE

These medical comments expressed by the experts of the FIG Medical Commission are general considerations to guide the physician in his task; he alone will decide each particular case independently and with full responsibility.