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Review Article,

Doping in Sport Dental Care Protocol

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Abstract:

Every year new formulas and substances are created to circumvent doping protection system created by WADA, companies that benefit itself working in the dark side of sport acting together with technical, nations sports committee's, etc. With this constant situation, where renewal formulas aimed at improving the performance of athletes, it´s important that health professionals, including the dentists who treat athletes, have knowledge of doping and are up to date in this context. The objective of this study was to create an aid protocol related to doping that help dentists that work in service with amateur and professional athletes. We know the need that a dentist who cares professionals athletes must have about the medicines that causes doping and what to do when he needs to prescribe any from WADA´s list with no harm.

Keywords: Sports dentristy, doping, athlete

Introduction:

The search for glory at the same time increase in physical capacity, normal to a professional athlete, makes that he has contact to doping, trying to accelerate this process and reaching results in competitions sometimes never expected.

The athletes daily pressure coming from sponsors, coaches, fans, might bring bad results in their careers. Trying to reach better results and even the glory of winning a competition, some professionals use doping.

Every day more cases of doping are reported in the national and international media, athletes who are idols in their countries end up opting for this practice so that they can maintain themselves at a high level during their career, some of these are discovered tarnishing an image conquered for years work and the other end up going unnoticed.

Others recognize the awareness of not using any type of doping, but sometimes end up using it without knowing it, due to the negligence of their trainers, for neglecting information or even for being assisted by medical dentists, etc. incapacitated in this matter.

Dental surgeons who are in contact with a professional athlete in outpatient care or in a multidisciplinary team need to be aware of the drugs that are routine or not and that can be prescribed by the dentist causing a risk situation for doping in an athlete.

Literature Review:

It is not new that it is known that sport is directly linked to the Brazilian people. Among so many references to our people, we are known as the "Football Country", however, expressive results were also achieved in several other sports.

This year we will host the most important sports competition in the world, the Rio de Janeiro Olympics (2016). Due to all these circumstances, and the great expectations of people who practice, work or simply watch this event through the media, we will have the responsibility to take all the necessary precautions and offer full conditions for the practice of sports.

Within this line of thought, dentistry is the science that, within all its specialties, promotes the maintenance of the entire stomatognathic system1,

2. Sports Dentistry is a new area where the dentist (DC) works in a multidisciplinary team, that seeks to develop and maintain the ideal physical conditions of athletes, it is known that with adequate oral health, the athlete's body will function better and more efficiently, as oral conditions have systemic repercussions. 3,4,5,6, with the promotion of oral health, there was the prevention of possible injuries resulting from sports activities and, consequently, enabling better performance in training and competition7,8.

Also, the dental professional must have knowledge of drug substances that may or may not be administered to athletes, as a substance that the dentist prescribes for his patient and is on the WADA (world anti-doping agency) list of prohibited substances may accuse doping and thus harm the career of your athlete patient, 9.

Doping

By definition, doping is considered to be the use of substances or methods capable of artificially increasing sports performance and that are listed by the WADA-AMA/IOC (World Anti-Doping Agency/International Olympic Committee) whether they are potentially harmful to the health of the athlete or his opponents, or contrary to the spirit of the game10.

Doping control is regulated by the International Olympic Committee, the International Federations and more recently by WADA-AMA. Annually, WADA publishes a list in which explanations are offered regarding prohibited substances and methods. The basic idea is that sportsmen in general know the list of drugs and methods to be avoided, assuming co-responsibility for the process of use control in sports practice11.

The list includes: substances such as anabolic agents, peptide hormones, growth factors and related substances, beta-2 agonists, hormone antagonists and modulators, diuretics and other masking agents, in addition to stimulants, narcotics, cannabioids and glucocorticoids; prohibited methods include increased oxygen transfer (artificial increase in oxygen uptake, blood manipulation to increase oxygen transport rate), chemical and physical manipulation, and gene doping; some substances are specific to some sports, such as alcohol and beta-blockers12.

Doping can be physical, chemical, biochemical, gestational and genetic. The best known and most performed doping is chemical with the use of medications, drugs and procedures not accepted by the International Olympic Committee; however, they are also the easiest to be detected13.

There are estimates that 60 to 80% of world-class athletes use some means of doping in training periods, and that it should be taken into account that an anti-doping test with a negative result during competition does not mean that the athlete never has if drugged during the training period14.

Doping and Doping

Because their definitions doping and doping are different terms, the difference between doping and doping is concluded, "by doping the agent or substance used must be understood; by doping, the use of this agent"15.

Among the factors that contribute to doping are: frequency, duration and intensity of training and competitions; insufficient recovery period between events; unfavorable weather conditions and stress caused by the public, media and sponsors16.

Doping In Dentistry

Dental surgeons are increasingly inserted in the context of sport, studies showing that an athlete needs to have good oral health in order to consequently have good physical performance, care and prevention of trauma in the oral region, and even with few references in relation to doping linked to the dentist is important, as is the notion of safe prescription for your athlete patient of a substance that is not on the WADA list.

Some medications that are commonly used by dentists can accuse an athlete of doping, such as steroids, the use of these substances in sport comes from their relaxing effects on the respiratory tract and, in a larger dose, from their analgesic effects. The boundary between airway opening and pain reduction prepares athletes for better training and sports performance.

Pharmacology

Drugs are substances administered or prescribed to patients in order to control, prevent or eradicate the painful sensation, inflammation, infections and/or fear and anxiety17.

Doping Control

Doping control can be performed on blood or urine or balloon testing. There are basically two types of anti-doping control:

Control in competition

The "in competition" control is performed immediately after the end of a
Agonistic activity12.

Control out of competition:
The control "out of competition" can be performed at any time, during training, at the athlete's residence, and even just before or after an agonistic activity12.

Therapeutic Use Protocol
Athletes may have illnesses and conditions that force them to take medication. In case of need to use any substance that appears in the list of prohibited substances, an exemption for therapeutic use can be granted so that the correct and effective health treatment can be done18.
There are three criteria for granting the release: the athlete's health problem must be significant; the therapeutic use of the substance must not produce improvement in the athlete's performance and there should be no other substance or method other than the prohibited one19.
Exemptions for therapeutic use are granted for a specific period and are valid. Therefore, the athlete must comply with all the conditions described for the treatment. In case of non-compliance with the recommendations, the World Anti-Doping Agency is competent to reverse the exemption 20.

Purpose:

This study aimed to assist in the creation of a care protocol for the dental surgeon in relation to possible substances administered by him that may cause doping in his athlete patient.

Methodology:

The present work is descriptive and for data collection the WADA list of prohibited substances from the years 2015 and 2016 and the book drug therapy in dentistry were used.

Results:

Benzodiazepines
This type of drug is increasingly used in dentistry, indicated for patients with dental trauma, for example, it provides relaxation during a treatment, it also produces a decrease in salivation, relaxation of skeletal muscles and the vomiting reflex.
Indications – In more invasive interventions such as abscess drainage.

Diazepam 10mg. It has its onset of effect in 60 minutes – Half-life in plasma from 20 to 50 hours and duration of effect from 12 to 24 hours. Do not use
Midazolam 7.5mg. 30 minutes of onset of action 1 to 3 hours of plasma half-life and 1 to 2 hours of effect duration Use
The Federation of modern pentathlon does not allow the use of sedatives in their competitions, which may be indicated as doping; therefore the dentist has to be aware of the use of this substance.

Antibiotic Prophylaxis
Indicated in patients with risk of infective endocarditis usually involving the heart valves.
Conduct will be the administration of an antibiotic before a dental procedure, therefore a dentist for this practice can safely administer any antibiotic indicated for each case, not even one of these drugs is on the WADA prohibition list, that is, they are not considered doping.

Acute Periapical Abscess
Infection in the root apex region caused by necrosis of the dental pulp, the patient may report severe pain, edema, swelling, etc.

Indicated use of antibiotics to fight infection other than doping.
Indicated use of non-steroidal anti-inflammatory for 3 days.
- Nimesulide 100mg - Released
- Ketoprofen 100mg - Released
- Piroxicam 20 mg - Released
- Sodium Diclofenac 50mg - Released
- Diclofenac Potassium 50mg - Released

Indicated use of Analgesics - pain control
- 500mg Dipyrone – Released
- Paracetamol 750 mg – Released

Use of Central Action Analgesics – Dentists recommend these types of analgesics when pain is very intense. Tramadol hydrochloride 50mg (Tramal®) - 6 x 6 hours. Substance monitored in accordance with code 2016. It does not indicate doping in competition, but this substance belongs to the narcotics class and is a monitored substance indicated to avoid for the athlete.
The use of controlled analgesics is indicated, as the patient may report severe pain due to the

accumulation of exudate in the apical region without a floating point for drainage.
Codeine + Paracetamol (tylex®) 30mg – Substance included in the monitoring system 2016 is not considered doping in competition but it is a monitored substance, so it is ideal to be avoided for athletes.
Oxidone hydrochloride 10mg (oxycontin®) specialists in maxillofacial and endodontists can prescribe this analgesic, 12 x 12 hour dosage, indicated as doping in competition in the stimulant class.

Periodontal Abscessence
Inflammatory process in the supporting periodontal, in response to an infection in a periodontal pocket.

Indicated to use antibiotics
- Amoxicillin 500mg - Released
- Allergic to penicillin - Clindamycin 300mg - Released
- Azithromycin 500 mg - Released

Indicated the use of Anti-inflammatory
- Nimesulide 100mg - released
- Ketoprofen 50mg - Released
- Piroxicam 20mg - Released

Retained Teeth
Indicated the use of antibiotics.
-Amoxicillin 500mg - Released
Indicated to use anti-inflammatory drugs
-Nimesulide 100mg - Released
Indicated to use the analgesic
-Sodium dipyrone 50mg – Released

Alveolite
Perform local anesthesia, clean the alveolus with warm saline, remove bone spikes or clots with curettes and do not suture.

Indicated the use of anti-inflammatory drugs:
- Nimesulide 100mg - Released
- Sodium Dipyrone 50mg - Released

Indicated use of antibiotics -
- Amoxicillin 500mg - Released

Pericoronaritis
Cleaning the site with removal of debris, using chlorhexidine 0.12%.
Systemic medication in case of trismus.
Indicated the use of: Amoxicillin 500mg, released + metronidazole 250mg released,+ Mioflex® 150mg, released.
Mioflex A 30mg – Substance monitored in 2016 subject to analysis.

Caffeine+Carisoprodol+Diclofenac +paracetamol.
Caffeine is a substance in the stimulant class, stimulant group and was included in the monitoring program in 2016. Athlete and dentist have to be careful when prescribing this medication.

Herpes Simples
Treatment is indicated using acyclovir-dermatological cream for local application. Released.
Immunocompromised patients indicated the use of acyclovir 200mg for systemic use. Released.

Candidiasis
Fungal infection usually related to the fungus of the class Candida albicans.
Treatment indicated a mouthwash with nystatin 100,000.00 units/ml 4 to 5 times a day, use of Miconazole Nitrate 28mg cream and fluconazole 150mg for systemic use, all substances are authorized by Wada.

Mouth Rinse:
It is important for the dental surgeon to be attentive in relation to indicating mouthwash for his athlete patient, an example of possible doping may be related to an athlete who spent some time very concentrated during his physical activity, without drinking water, resulting in a xerostomia situation and causing a halitosis, and before being directed to doping testing, you can use a mouthwash with alcohol, remembering that some brands may have a concentration of up to 27% alcohol in a container, using it beforehand without knowing this information, the alcohol can remain in the oral cavity and during a test eg in a sport of shooting, motor racing, archery, billiards, motorcycling, modern pentathlon where alcohol is prohibited by the WADA, the balloon test is often indicated, which may indicate doping.
"The article in Folha de S. Paulo (01.31.13, p. C9), with authorization from the Military Police, performed the following test: one person ate a bonbon with liquor, another used a mouthwash and the third drank 200 ml of beer (less than half a glass of beer). Then they went through the

breathalyzer (breathometer). Result: 0.08 mg, 0.34 mg and 1.31 mg, respectively. The first situation would have been framed in the administrative infraction and the last two in the crime of article 306."

Listerine® with alcohol has 26.7% alcohol content in its formula, there is a case in the media that a driver mouthed 2 glasses of Listerine® after colliding with a vehicle in the rear and was subjected to the breathalyzer being fined and arrested for being under the effect of alcohol after the blood test proved that she had not drunk alcohol.

Another brand of mouthwash, Colgate® has 16.5% alcohol in its formula.

As the rinse is only in the oral cavity, if you do the balloon test and test positive, the athlete can ask to do the test again in 10 to 15 minutes, as alcohol like this in the oral cavity evaporates very quickly.

Articaine with Epinephrin

This anesthetic can be detected in urine, dental surgeons have to be careful even if it is not indicated as a doping substance when in dental use, it is important to know, as it appears in urine and can be something that draws the attention of doping committees in a possible test anti-doping, can stay up to 5 hours in the bloodstream until excreted, patient arrives with pain before a competition eg pulpitis in element 36 is used 1,100,000 articanain associated with epinephrine (adrenaline) four or five tubets for initial approach frees athlete for game, athlete selected for doping test right after the 90 minutes of soccer, adrenaline can be detected in the urine and may cause some inconvenience for the athlete with the doping commission.

Articain is metabolized in the liver and blood plasma and can therefore be detected by remaining in the bloodstream.

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DEXADOR® (Dexamethasone Phosphate 0.5mg + Vitamin B12)

Indicated for facial paresthesia. Dosage for oral use, take one tablet every two hours for five to seven days or while the inflammation lasts, one whole tablet with a glass of water or other liquid. In the injectable form it is a single intramuscular dose.

Dentists should be aware, because a situation that can occur is when a tennis athlete takes a ball in the orbicularis oculi region of the eye, orbicular nerve paresthesia can occur and so one of the indications would be the most important Dexador® to be careful, because in your formula has corticoid, which is a doping substance of the glucocorticoid group during competition, free during non-competition period.

Dexalgen®

Medicine for injectable use containing 1.5 mg dexamethasone disodium phosphate in its formula indicated in dentistry for trigeminal neuralgia dosage indicated applications every 24 hours for 7 days , this medicine will be tested in a doping test during a competition because it is included in its formula a glucocorticoid is a prohibited substance under the WADA.

Glycerol

Glycerol, (or Bidistilled Glycerin), started to be considered doping from the beginning of 2010, being classified as a possible masking agent of other substances. In other words, as a rule, glycerol is used for fluid retention in extreme heat environments by retaining fluid in the plasma, thus acting as a plasma expander, this in turn could mask the detection of doping substances in fact21.

Some toothpastes contain glycerol in their excipients, so it is not indicated for use in athlete patients. Examples include Trihydral® and Flogoral® toothpastes; the latter being indicated for patients with canker sores, post-operated patients in dental surgery eg multiple extractions, third molar extractions, etc.

Some medications that a dentist can prescribe after a dental procedure or to act during pain, for example, in a pulpitis it has glycerol in its excipients for the formulation of its gelatinous capsule, so medicines that have a gelatinous capsule should be avoided, for example Advil® 400mg (Ibuprofen) is indicated for this drug, because according to the manufacturer, it has a faster onset of effect because its liquid capsule is absorbed faster than a normal capsule.

Therefore, anti-inflammatory drugs such as ibuprofen 300mg, nimesulide100mg, diclofenac 50mg can be administered by dental surgeons, only avoid medicines with gelatinous capsules, as they contain glycerol in their excipients.

Ginglione® (Hydrocortisone Acetate 5mg)

Its active principle is hydrocortisone acetate, a glucocorticoid indicated for its use in the acute phase of oral infections caused by germs sensitive

to neomycin, stomatitis, canker sores, lesions of the oral, lingual and gingival mucosa. Bleeding of the gums. Its dosage in tablets is to let it dissolve slowly in the mouth; 3 to 6 tablets daily, not being suitable for athletes, as it has corticoid in its formula and is a doping substance.

.**Glycocorticoids**

Dentists routinely indicate the use of these drugs in dental practice, they are more potent in relation to NSAIDs, and are considered doping substances because the articular and peri-articular anti-inflammatory properties of glucocorticoids are used in order to improve sport performance through improvement in recovery after competitions.

-Betamethasone, dexamethasone etc. they are doping substances.

Conclusion:

The development of this work paves the way for the attention that the Dentistry Professional must have in relation to the general health of their athlete patient, taking into account the importance of preventing doping cases in the sports field, the need for the work of multidisciplinary teams arises, so that athletes do not have their careers jeopardized due to the ingestion of illegal substances.

As pharmacology is in a current evolution, it should always be something studied by the dentist, for the motivation of results, better athletes dope themselves of their own volition, but many other cases happen due to unpreparedness in relation to this matter of technicians, health professionals and athletes and only they are responsible for what they ingest.

At the end of this work, an attempt was made to create a material that can help dentists who work with athletes to have a notion in relation to a safe medication prescription for their patients without the same risk of being caught in a doping test.

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