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Research Article

Corticosteroid Abuse as a Widely Seen Problem among Refugee Populations; A Novel Approach to Infectious Complications from the General Surgery Window

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Abstract

Introduction: Drug abuse still constitutes a big problem for developed countries. In this study, we researched the local infectious complications in intramuscular injections of corticosteroid (CS) – Anabolic/Androgenic Steroid (AAS) preparations for subjective reasons (primarily weight gain/analgesia) among women. We also think that this study is significant as it is the first study done on an only-female population with CS-AAS abuse for a whole different reason.

Patients and Methods: 146 patients with abscess development on an injection site were included in the study. Injections were performed by non-medical personnel in all cases. 92 patients received CS-AAS mixture in varying doses whereas 54 patients received analgesic-muscle relaxant (AMR) mixtures. Infectious complications were compared.

Results: In 78.7% (115) of patients, the injection site was atypical and wrong. 52 (96.2%) patients in AMR group samples showed *S. aureus* proliferation whereas 2 (3.7%) showed *E. coli* proliferation. With proper antibiotic treatment, the infections were controlled in a relatively short period, In the steroid injection group, 54 (58.6%) patients developed S. aureus, 9 (9.75) developed *S. pyogenes*, 13 (14.1%) developed *E. coli*, 12 (4.3%) developed polymicrobial proliferation and 4 (4.3%) patients showed MRSA proliferation in their culture samples, respectively. In this group of patients, hospitalization, parenteral antibiotic treatment in addition to other surgical treatments were indicated.

Discussion: AAS abuse is mainly aimed towards muscle growth and performance enhancement in most of the world. However, in smaller communities they can also be used for different purposes and combinations and especially infective complications thereof pose a threat to public health in addition to a personal health issue.

Keywords: Cortico Steroid Abuse; Local Infection; Antibiotherapy

Introduction

Drug abuse still constitutes a big problem for developed countries, including Turkey [1]. When the parenteral route of administration is used in drug abuse, it could cause serious health issues when combined with bad hygienic conditions and improper administration methods [1]. In addition, we also argue that recreational drug use is a key factor in the development of certain complications. In our study, we researched the local complications in intramuscular injections of corticosteroid (CS) – Anabolic/Androgenic Steroid (AAS) ampoules for subjective reasons (primarily weight gain/analgesia) in women. We also think that this study is significant as it is the first study done on an only-female population with CS-AAS abuse for a whole different reason.

Patients and Methods

146 patients with abscess development on an injection site were included in the study. Injections were performed by non-medical personnel (inexperienced or self-injection) in all cases. All the patients were unable to recall if the hypodermic needles were sterile or not nor did they see it being opened for the first time prior to use. All patients reported that the injection site was not sterilized prior to injection. When the injected drugs were classified, 92 patients received CS-AAS mixture in varying doses whereas 54 patients received analgesic-muscle relaxant mixtures. While performing the retrospective assessment, antibiotic injections were excluded due to their localized antimicrobial effects. In addition, patients with immunosuppression, severe comorbid diseases and chronic drug abuse problems were also excluded from the study. Abscess drainage or local drainage techniques were used in all patients and culture samples were collected. Patients with non-analyzed culture samples due to technical difficulties or patients whose culture samples were not sent to labs were excluded and 146 patients with proper microbiological results were included in the study.

Results

In 78.7% (115) of the patients, the injection site was atypical and wrong (Picture 1-2-3-4). Empirical antibiotics therapy (penicillin-cephalosporin class) with abscess drainage was performed in all patients and culture samples were submitted. 52 (96.2%); patients in analgesic-muscle relaxant injection group samples showed *S. aureus* proliferation whereas 2 (3.7%) showed *E. coli* proliferation. With proper antibiotic treatment, the infections were controlled in a relatively short period (min 4, max 12 days, mean hospitalization period 6.88 days). No systemic complications were detected. In steroid injection group, 54 (58.6%) patients developed *S. aureus*, 9 (9.75) developed *S. pyogenes*, 13 (14.1%) developed *E. coli*, 12 (4.3%) developed microbial proliferation not related to contamination and 4 (4.3%) patients showed MRSA proliferation in their culture samples, respectively. All patients made a complete recovery without morbidity or mortality. In patients with *S. aureus* infections, 33.3% of the patients required hospitalization and parenteral antibiotic treatment according to antibiogram results. In all other patients, hospitalization, parenteral antibiotic treatment in addition to other surgical treatments (debridement, drainage, open dressing, VAC applications etc.) were indicated. In this group, the average hospitalization period was 11.4 days ($p<0.005$) and systemic complications which required intensive care during hospitalization were also seen.

Discussion

AAS abuse dates to the 1950's. Following the isolation of testosterone by David and Wettstein in 1930 paved the way to the development of synthetic derivations thereof. In the 1950's, professional athletes found out about the positive effects of AAS in muscle growth and finally, Soviet National Lifting Team used it openly in the 1954 Vienna Weightlifting Championships [1]. In the following years, AAS usage increased from a limited age and social range to a widespread usage in the general population [1,2]. On the other hand, CS abuse is mostly seen in topical use and systemic CS abuse is very rare [3-5]. A combined misuse of CS-AAS was never reported in a patient group as in our study previously. As a matter of fact, mainly the misuse of these drugs and common usage of AAS were seen overwhelmingly in males and is related to muscle development purposes and a very small number of female athletes use it for performance enhancement [2,6]. A study done by Kanayama et al in 2009 reported the male/female ratio of AAS misuse as 12 females to 641 males.

Misuse of AAS-CS combination investigated in this study however shows very wide differences both for indications and usage method. This combination is used amongst refugee women population with weight loss in a city located on the Syrian-Turkish border in the Southeastern Anatolian part of Turkey, which has the highest rate of refugees. In the region, as opposed to the rest of the world, the feminine beauty ideals are related with a woman being overweight. Young thin female patients use this combination to gain weight. This weight-gain "illusion" is probably due to the drug's effects of generalized edema and increased muscle definition in higher doses. In addition, especially analgesic effects of CS drugs as a secondary gain increases the usage of these drugs. In this study, only the patients who were presented to hospital due to infection could be assessed and the source of these drugs, used frequently by almost every 1 out of 2 young females, remain unknown. However, it is known that there are people who administer injections by travelling from village to village and self-administra-

tion and injection of these drugs between friends is common. For this reason, as mentioned above, the injection site was wrong in almost 80% of the injections and almost all were administered without following asepsis protocols, which as a result, shows both the systemic complications and local effects of those drugs used.

Cardiovascular, endocrine and other systemic side-effects of these type of drugs are quite severe and when coupled with sudden withdrawal, they are known to have a high rate of morbidity and mortality rates which constitute a serious public health concern [8-11]. Our study has the significance of being the first study that discusses the local injection effects of these drug groups in such a large female patient population. It is shown that AAS-CS combinations caused much more severe and resistant infections when compared to analgesic-muscle relaxant group, under the same conditions where asepsis protocols were not followed. It is clear that this is due to systemic immuno-suppressive effects in addition to local immunization suppression, which as a result increases the infection resistance. In community-acquired infections, especially as shown in our study, *S. aureus* constitutes the majority of cellulitis and related soft-tissue infections. However, especially in immune-suppressed patients, atypical or polymicrobial infections were also detected [12-14]. An ultrasonography confirmation, followed by antibiotic treatment coupled with surgical techniques (when indicated), establishes the main treatment. On the other hand, as in our study case, population, in situations where an unknown underlying immune-suppression is present, morbidity and mortality rates increase significantly. This can be interpreted as a public health concern as for an increased number of resistant strains, in addition to a personal health issue [15-18].

AAS abuse is mainly aimed towards muscle growth and performance enhancement in most of the world. However, in smaller communities (as in our study), they can also be used for different purposes and combinations and especially infective complications thereof pose a threat to public health for its infectious nature, in addition to a personal health issue [19]. As the standards of beauty and general outlook on life can vary in small and enclosed ethnic groups, the physicians are clueless most of the time about what is actually going on in those communities. Today, especially when the refugee situation is slowly becoming a global crisis, proper sharing of knowledge and the additions and warnings made in the literature about these subjects would be beneficial in increasing awareness in the daily practice of physicians and optimizing its effects both on personal and public health.

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