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The Improper use of Antibiotics: A Survey on Apulian GPs

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Abstract

Aim: To define and evaluate the role of Apulian General Practitioners in regarding the prescribing appropriateness of antibiotics and the importance of counseling for patients, to identify and manage the problem of ABR, particularly in the context of upper respiratory tract infections.

Materials and methods: the survey was conducted through the administration of a questionnaire consisting of 10 items addressed to the GPs of the Apulian territory, in the period from January to April 2024, by email, instant messaging and social media.

Results: 180 General Practitioners were interviewed, (58% women 42% men) of which 45% GPs with >1500 patients, 32% urgent care doctors, 16% GPs with 1200-1500 patients, 3% GPs with 1000- 1200 patients and 5% GPs with 800-1000 patients.

65% of GPs (n:117) prescribe an average of 5 antibiotics per week, 22% of GPs (n:39) prescribe 6-10 antibiotics and 13% (n:24) more than 10 antibiotics. Patients ask for antibiotics for the following reasons: pharyngitis (68%), urinary tract infections (69%), cough (40%), acute bronchitis (44%), otitis (23%), sinusitis (18%), cold (16%), other flu symptoms (15%). General Practitioners report that every day on average at least one patient requires a prescription for an antibiotic for a pharyngitis. In 33% of cases it is a woman (33%), very insistent (52%), arguing the need to resume her work activity as soon as possible (34%), for self-diagnosis (32%) for comparison with family members with similar symptoms who would have been prescribed an antibiotic (32%), for having started home therapies, residues of previous therapies.

GPs report a patients' poor awareness about side effects, compared to the deep-rooted belief that the antibiotic guarantees a quicker and better resolution of symptoms.The proposals to stem the phenomenon from the GPs interviewed suggest patient education to limit improper requests (79%), counseling not to use antibiotics in viral infections (77%), information on individual adverse events linked to abuse (56%), empowerment regarding the impact on the global health of the planet and the growing difficulty in treating infections caused by resistant germs (52%), synergistic action with pharmacists (48%), greater diffusion and training for the application of treatment guidelines in primary care (19%) and more frequent updating on the issue of AMR (15%).

Regarding the use of diagnostic tests such as the rapid test for beta hemolytic streptococcus, although little used in general practice, the majority of participants (80%) consider it strategic to avoid inappropriate antibiotic therapies and guide the patient towards its use of symptomatic. 83% of GPs recommend the use of anti- inflammatory-analgesics for the management of "sore throats" and confirm the need to combat the abuse of antibiotic therapy requests.

Conclusions: Antibiotic resistance is a multifactorial public health issue that requires urgent prevention and control actions at global and cross-sectoral. General Practitioners in Apuglia have a fundamental role on the correct use of antibiotics. It is necessary to promote health education and patient counseling, citizen empowerment about good hygiene practices (use of DPI, hand washing, etc.), attention to environmental contamination (e.g. waste disposal); to encourage adherence to vaccination and the appropriate use of antibiotic or symptomatic therapies for themselves and for the community; to reduce the tendency to self-prescribe antibiotics and the adverse events related to it, such as the percentage of treatment failures and healthcare costs; to apply the guidelines in pharmaceutical prescriptions; to join collaborative, research and innovation initiatives to combat ABR.

A possible helpful tool may be the use of rapid diagnostic tests to reduce the inappropriate prescription of antibiotics. We need to move from a simple idea of appropriateness in prescription to an overall cultural appropriateness of a healthcare nature.

In fact, General Practitioners can act effectively only with other stakeholders, to trigger virtuous processes, respecting the skills and responsibilities of each individual, in order to always be able to operate for the best clinical outcome, in the absence of ethical conflicts. At the same time, we hope for more training opportunities for healthcare workers, pharmacists and veterinarians, in integrated multi-sectoral events, according to the principles of One Health.

Keywords: antibiotic resistance; General Practitioners; sore throat

Introduction

Antibiotic resistance (ABR) is the central nucleus of Antimicrobial resistance (AMR). It is defined as the ability of a microorganism to resist one or more molecules (Multi-resistance Drugs MDR) potentially capable of eliminating or stopping its growth and, therefore, to proliferate in the presence of a concentration of antibiotic, generally sufficient to inhibit or eradicate microorganisms of that same species [1].

The great availability of drugs since the 1980s has made it possible to have various tools against infections, but it has isolated resistant microorganisms, from MRSA (methicillin- resistant Staphylococcus aureus) to enterobacteria producers of extended- spectrum beta-lactamases (ESBL+), to the carbapenemase-producing Enterobacteriaceae, such as Klebsiella KPC and, as there are no new antibiotics on the market, it has also been necessary to resort to older antibiotics, which are not always effective and have greater adverse effects and toxicity [2-3].

ABR increases morbidity and mortality, complications, healthcare-associated infections (HAI) and difficulties in managing frail or immunocompromised patients; from an economic point of view it causes high costs for drugs, prolonged hospital stays, greater consumption of healthcare resources and absences from work [4].

In consideration of the rapid spread of AMR and the limited effective therapeutic options against it, the critical issues in the introduction of new drugs, we can speak of a true global emergency for global health and development, which according to the WHO causes five million of deaths per year and which in 2050 will lead to 10 million deaths.

Antibiotic use and antibiotic resistance represent one of the most significant public health challenges globally. At the end of 2022, the ECDC reported 35,000 deaths in Europe and 11,000 in Italy, with a significant clinical and economic impact, so ABR constitutes one of the main challenges of the healthcare system.

The causes are to be found in a global health perspective, both in the healthcare sector with inappropriate prescription, incorrect dosage and poor vaccination adherence, and in the zootechnical sector with medicated feed in intensive farming, agricultural contamination with animal excrement and human consumption of these products, both environmental through contamination of water and soil for industrial activities and disposal, residues in urban waste [5].

The surveillance and monitoring of ABR, the identification of intervention strategies, to stem this phenomenon take place worldwide by the WHO with the GLASS (Global Antimicrobial Resistance Survaillance System) project, which involves 109 countries; at European level with the EARS-Net (European Antimicrobial Resistance Surveillance Network) database, established in 2010 by the ECDC (European Center for Disease Prevention and Control); in Italy, through the AR-ISS coordinated by the Istituto Superiore di Sanità, which collects and sends data from 153 Italian laboratories to the EARS- Net.

Furthermore, the Ministry of Health launched the National Plan to Combat Antibiotic Resistance in 2019 and renewed after three years in 2022, which consists of six sections concerning the surveillance, prevention and monitoring of resistant diseases, the appropriate use of antibiotics, training, communication and information [7, 8].

Italy records one of the highest levels of use of antibiotics for human and veterinary use compared to Europe, especially broad-spectrum antibiotics.

ECDC reports a number of HAI cases in Italian hospitals higher than the European average. Up to 75% of these are due to multi-resistant germs.

Changes of healthcare in recent decades, care in extra-hospital settings has much more importance, whether at home or in residences or long-term care or community hospitals, rehabilitation, so it is better to speak about Related Infections to assistance in all care settings, not just hospitals. Various interventions are also put in place to reduce HAIs and control the risk of infection, which are not always respected in different settings, from case surveillance to the definition of care protocols and monitoring of good practices and correct behaviors (hand washing reduces 30% risk of infections), continuous staff training, clear and defined procedures, vaccinations of staff and patients.

In Primary Care, in the year 2020 approximately the 90% of antibiotic consumption was paid for by the NHS: approximately 3 out of 10 patients were prescribed an antibiotic for 14 days on average per year, but almost a third of prescriptions are inappropriate. For example, it seems that the symptom pharyngodynia, despite being of viral etiology in 80% of cases, is often treated with antibiotics [9].

These empirical treatments in first line monotherapy (usually amoxicillin) are often unsuccessful, resulting in the use of a second antibiotic in the following 30 days, especially in the case of infection of the lower respiratory tract in 17%, and of the upper respiratory tract in 14%.

The use of combinations of antibiotics for the upper respiratory tract, fluoroquinolones, cephalosporins and macrolides for the lower respiratory tract, which are also often unsuccessful, with further influence on antibiotic resistance, is increasing [13]. In some cases, the inappropriateness is not linked to the use of one molecule rather than others, but also to the correct dosage, duration of therapy, to the failure to verify 48-72 hours after therapy.

A recent meta-analysis of 34 randomized clinical trials (9 on aspirin, 4 on naproxen, 12 on ibuprofen, 3 on diclofenac and 6 on other NSAIDs) confirmed the significant role of NSAIDs in reducing the symptoms associated with upper respiratory tract infections such as fever and pain of throat.

Sore throat can be effectively treated with non- steroidal anti-inflammatory formulations at a local level as the targeted application of the active ingredient such as flurbiprofen directly on the site reduces the dose of drug to be administered compared to the systemic route and consequently the risk of potential events adverse. The relief of symptoms brought about by the local application of NSAIDs would represent a relevant reason for patients to reduce the use of inappropriate antibiotics [11, 12].

There are few studies in primary care that investigate exposure to antibiotics, the prevalence of invasive infections, from which it is possible to optimize so-called "antibiotic stewardship" programs, i.e. actions aimed at appropriate use of antibiotics and reduction of ABR, considering that in this setting they would have strategic significance. At a territorial level, even in residential facilities, fragile and complex patients are intercepted, often colonized (presence of microorganism in the host in the absence of invasion and response of the organism, which does not require therapy but can be a source of infection) or infected (invasion and replication of the microorganism with its response, for which antibiotic treatment is necessary) by resistant germs but there are still few studies that evaluate the phenomenon [14, 15].

General medicine, on the other hand, constitutes a priority sector in this area for applying interventions usually reserved for hospitals, having full decision-making power from a clinical point of view, despite having to deal with numerous prescriptions induced by specialists [16, 17].

The so-called "sore throat" is one of the most common reasons why patients turn to their doctor, as it causes discomfort and pushes patients to insistent requests for inappropriate antibiotic therapies, contributing to the growing problem of ABR [11].

Aim:
The objectives of the study are:

To define and evaluate the role of Apulian GPs in promoting the appropriateness of prescribing antibiotics,

To understand the importance of patient counseling and provide patient education materials especially a thoughtful approach to sore throat,

To identify and manage the problem of ABR, particularly in the context of upper respiratory tract infections.

Materials and Methods

The survey was conducted through the administration of a questionnaire consisting of ten items addressed to the GPs of the Apulian territory, in the period from January to April 2024, by email, instant messaging and social media.

Results

180 GPs were interviewed (58% women 42% men) of which the 45% GPs with more than 1500 patients, the 32% urgent doctors, the 16% GPs with 1200-1500 patients, the 3% GPs with 1000 -1200 patients and the 5% GPs with 800-

1000 patients.

The 65% of GPs (n:117) prescribe an average of 5 antibiotics per week, the 22% of GPs (n:39) prescribe 6-10 antibiotics and the 13% (n:24) more than 10 antibiotics.

Patients ask for antibiotics for the following reasons: sore throat (68%), urinary tract infections (69%), cough (40%), acute bronchitis (44%), otitis (23%), sinusitis (18%), cold (16%), other flu symptoms (15%). GPs report that every day on average at least one patient requires a prescription for an antibiotic for a sore throat.

The identikit of the patient who is an immoderate user of antibiotics is a woman (33%), very insistent (52%), who needs to resume her work activity as soon as possible (34%), who carries out a self-diagnosis (32%) who are dealing with family members with similar symptoms who have been prescribed an antibiotic (32%), who start home treatments due to residues of previous therapies or because they have requested antibiotics for their family members to have a "supply" ready at home to use. Only 10% of men, according to the colleagues interviewed, use antibiotics excessively.

The 27% of those interviewed prescribe antibiotics to patients with occasional acute illnesses, 36% to patients with recurrent infections, 26% to patients with comorbidities and finally 5% of those interviewed to patients without concomitant pathologies.

The most important element in the development of resistance to an antibiotic was attributed by doctors, in similar proportions, to its therapeutic ineffectiveness but also to the taking of a previous course of antibiotics, to persistent symptoms and to reduced therapeutic adherence. In fact, the abuse of antibiotics in the specific case of "sore throat" was determined by the expectation of a rapid recovery and by the lack of knowledge of the mechanism of action and side effects associated with the widespread availability of antibiotics at home.

The GPs refer a lack of awareness on the part of patients of the side effects, compared to the deep-rooted belief that the antibiotic guarantees a quicker and better resolution of the symptoms and the total disregard for the concrete possibility of soon no longer having effective antibiotics to treat pathologies.

The GPs interviewed suggest patient education to limit improper requests (79%), counseling not to use antibiotics in viral infections (77%), information on individual adverse events linked to abuse (56%), empowerment regarding the impact on the global health of the planet and the growing difficulty in treating infections caused by resistant germs (52%), synergistic action with pharmacists (48%), greater diffusion and training for the application of treatment guidelines in primary care (19%) and more frequent updating on the issue of AMR (15%).

Regarding the use of diagnostic tests such as the rapid test for beta hemolytic streptococcus, although little used in general practice, the majority of participants (80%) consider it strategic to avoid inappropriate antibiotic therapies and guide the patient towards its use. of symptomatic.

83% of GPs recommend the use of anti- inflammatory-analgesics for the management of "sore throats" and confirm the need to combat the abuse of antibiotic therapy requests.

The observations that emerged from the discussion based on daily practice fully reflect the themes reported in the scientific literature and can be summarized in these ideas:

An important factor favoring AMR is the excessive handling that patients have developed towards antibiotics, believing them to have no adverse effects, or a way to speed up recovery and avoid a significant impact on daily activities of a respiratory infection. The incorrect perception of the role of symptomatic drugs as the first therapeutic approach is highlighted. The survey highlighted a high propensity of GPs to recommend anti- inflammatories or analgesics, locally and systemically, even if they do not respond to the patient's requests.

The refusal of the antibiotic prescription leads the doctor to a confrontation with the patient that is often challenging to manage in the context of intense professional activity.

In particular, the most critical conditions occur at the weekend, the patient's anxiety, prescriptions induced by medical specialists (frequently dentists), overcrowding i.e. the high number of visits, the availability of antibiotics at home and out of habit (e.g. the propensity of other doctors to make extensive use of antibiotics).

To counteract inappropriate requests and the excessive use of antibiotics, as well as avoiding defensive medicine practices, some strategies are hypothesized in the management of the doctor-patient relationship such as reassuring the patient by offering him a new close visit in case of persistence of symptoms, explain and contextualize the symptoms, in relation to a usually viral infection, involve the patient and make him aware of a non-prohibitionist approach aimed at promoting health literacy on the natural course of the disease, raising awareness of any unwanted and toxic effects of antibiotics, evaluating the cost/benefit ratio, underlining that the recovery time of a viral infection cannot be shortened with the use of antibiotics, avoid prescribing antibiotics for prophylactic purposes if there is no need, suggest the use of symptomatic drugs and monitoring of the course of symptoms, as a criterion for clinical monitoring of

the progress of the ongoing disease.

Conclusion

Sore throat is one of the most common reasons patients see their doctor. The discomfort caused by symptoms pushes patients towards the excessive self-prescription use of antibiotics, contributing to the growing problem of antibiotic resistance. The possibility of rapid relief of symptoms is an important factor in meeting patients' needs and avoiding unnecessary and inappropriate use of antibiotics. From the survey data, a picture emerges in line with national data and underlines the attention of GPs to the use of anti-inflammatories for sore throats, confirming the need to combat the improper use of antibiotics with the aim of reducing recovery times. healing.

Antibiotic resistance is a multifactorial public health issue that requires urgent prevention and control actions at global and cross-sectoral levels. Primary care doctors in Puglia have a fundamental role in acting in the area on the correct use of antibiotics, in line with the interventions envisaged by the National Prevention Plan and the PNCAR 2020-25 (National Plan to Combat Antibiotic Resistance). The interventions must aim to: promote health education and patient counseling, citizen empowerment in the adoption of good hygiene practices (use of PPE, hand washing, etc.), attention to environmental contamination (e.g. waste disposal); to encourage adherence to vaccination and the appropriate use of antibiotic or symptomatic therapies for themselves and for the community; to reduce the tendency to self-prescribe antibiotics and the adverse events related to it, such as the percentage of treatment failures and healthcare costs; to apply the guidelines in pharmaceutical prescriptions; to join collaborative, research and innovation initiatives to combat ABR.

A possible helpful tool may be the use of rapid diagnostic tests for the quantitative determination of C-reactive protein in the blood, in clinics or pharmacies, as suggested in the Consensus Conference Enaspoc (European Network for Antibiotic Stewardship at the Point of Care), as it impacts the inappropriate prescribing of antibiotics. PCR is a biomarker useful for evaluating and predicting the severity of inflammation and therefore infection. With values <20mg/L the antibiotic has no additional benefit compared to purely symptomatic drugs, as it is self-limiting inflammation. In this way, it is possible to have simple and incisive tools on a large scale, available to adequately trained operators, as well as acting preventively with vaccination administration.

We need to move from a simple idea of appropriateness in prescription to an overall cultural appropriateness of a healthcare nature. In fact, GPs can act effectively only in close synergy with other stakeholders, to trigger virtuous processes, respecting the skills and responsibilities of each individual, in order to always be able to operate for the best clinical outcome, in the absence of ethical conflicts. At the same time, we hope for more training opportunities for healthcare workers, pharmacists and veterinarians, in integrated multi-sectoral events, according to the principles of One Health.

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