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COMORBIDITY PROFILE AND PHARMACOTHERAPY COMPLIANCE IN POST-COVID-19 ASSOCIATED DIGESTIVE DISEASES: A POPULATION-BASED STUDY IN THE FERGANA REGION OF UZBEKISTAN

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Abstract. We assessed comorbidity and drug therapy in Post-COVID-19 associated digestive diseases (DD) among 1,605 adults aged 18-60 years in the Fergana region. Cardiovascular diseases (51.5%), anemia (32.2%) and arterial hypertension (25.3%) formed the main comorbid background. Comorbidity was more frequent in women than in men (55.4% vs 44.6%; P<0.05). Compliance of pharmacotherapy with clinical standards was 87.8% in women and 65.1% in men. A regional program built on these data reduced complication risk by up to 64.9% and stopped inappropriate antibiotic use.

Keywords: post-COVID-19 condition, digestive diseases, comorbidity, pharmacoepidemiology, arterial hypertension, anemia, treatment compliance.

INTRODUCTION

Post-COVID-19 condition involves several organ systems at once [1]. In a cohort of 153,760 US veterans, the risk of incident cardiovascular disease stayed elevated for at least 1 year after infection, even in people who were never hospitalized [2]. So a patient with a digestive disease after COVID-19 rarely has just one diagnosis. When a cardiac problem dominates the clinical picture, digestive symptoms get pushed aside and the gastrointestinal diagnosis comes late.

Drug therapy adds a second layer of risk. A meta-analysis of 30,623 patients showed that 74.6% of people with COVID-19 received antibiotics, while bacterial co-infection was estimated at only 8.6% [3]. Pre-existing conditions also shaped outcomes in the acute phase: in the OpenSAFELY analysis, diabetes, chronic kidney disease and other comorbidities were linked to higher COVID-19 mortality [4]. The Eurasian ACTIV registry, which includes Uzbekistan, was set up to follow the course of such chronic diseases after infection [5].

Comorbidity and pharmacotherapy in Post-COVID-19 associated DD have not been studied in the Fergana Valley.

Aim: to describe the comorbidity structure and the pharmacoepidemiological profile of Post-COVID-19 associated DD in the Fergana region.

MATERIALS AND METHODS

We randomly enrolled 1,605 COVID-19 survivors aged 18-60 years (853 women, 53.1%; 752 men, 46.9%) registered at Fergana city polyclinics [7]. Post-COVID syndrome was diagnosed from clinical symptoms and the NICE criteria (2020). Comorbid conditions (arterial hypertension, coronary heart disease, chronic heart failure, arrhythmias, other heart diseases, chronic kidney disease, cerebrovascular disease, diabetes mellitus and anemia) were diagnosed by generally accepted criteria.

Pharmacoepidemiological risk was defined as any deviation from treatment standards. Data came from a pharmacoepidemiological questionnaire and from all case histories and outpatient records (100%), and were evaluated by VEN analysis. Two groups of drugs were assessed: injectable (pantoprazole [Nolpaza] with sodium chloride; Reosorbilact) and oral (paracetamol, an antacid

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[Simalgel], lactulose [Duphalac], pancreatin, zinc, calcium with vitamin D3). Compliance was judged against national clinical guidelines [6]. Statistics were run in Microsoft Excel and IBM SPSS Statistics 27.0: descriptive statistics, χ^2 test, relative risk (RR) with 95% confidence interval (CI) and correlation analysis.

RESULTS

In the whole Post-COVID-19 population, comorbidity was distributed as follows: all cardiovascular diseases 51.5%, anemia 32.2%, arterial hypertension 25.3%, diabetes 9.9%, coronary heart disease 8.4%, arrhythmias 7.7%, chronic heart failure 5.0%, chronic kidney disease 3.2% and cerebrovascular disease 3.2%.

Comorbidity was more frequent in women (55.4% vs 44.6%; RR=1.11; 95% CI 1.04-1.18; χ^2=10.02; P<0.05). The female share was largest for anemia (62.1% vs 37.9%) and chronic kidney disease (59.6% vs 40.4%). Coronary heart disease was more common in men (20.7% vs 12.3%; P<0.005). Urban residents made up 80.5% of comorbid patients and rural residents 19.5% (χ^2=39.25; P<0.01).

In women, injectable drugs were used most often in cardiorespiratory comorbidity (22.2%), chronic diffuse liver disease (19.6%), neurological disease (19.1%) and chronic cholecystitis (16.5%). Overall compliance with standards was 87.8% in women and 65.1% in men. In men, injectable regimens were fully compliant (100%), but oral regimens complied in only 69.7% of cases, which left a pharmacoepidemiological risk of 34.9%. Compliance of oral therapy was almost the same in rural (77.1%) and urban (76.6%) patients. It reached 89.2% in the indigenous population, 88.8% in manual workers and 78.9% in people doing mental work.

After the regional program based on these findings was put into practice, the early diagnosis rate rose above 50%, the risk of complications fell by up to 64.9%, and inappropriate antibiotic prescribing was eliminated.

DISCUSSION

The dominance of cardiovascular disease matches the US cohort data, where COVID-19 survivors had higher 1-year risks of ischemic heart disease, dysrhythmias, heart failure and cerebrovascular disorders [2]. The likely mechanisms are endothelial injury, persistent inflammation and hypercoagulability [1]. Anemia in about 1 in 3 patients probably has 2 sources: inflammation-driven iron restriction and poor iron absorption in gastritis and peptic ulcer disease. We think hemoglobin and iron status should be checked routinely in these patients.

The gap in compliance between women and men (87.8% vs 65.1%) is the most practical finding, and it comes almost entirely from oral therapy. Men may self-medicate more or miss follow-up visits, though our data cannot confirm the reason. Pharmacological supervision should start with them.

Antibiotic overuse during the pandemic is well documented [3]. In our setting, a standards-based protocol removed it, so the problem responds to simple organisational measures. Two limits apply. Indigenous Uzbeks made up 98.6% of the sample and urban residents 72.6%, so ethnic and urban shares partly mirror the sample itself. The program outcomes also need confirmation in a controlled design.

CONCLUSION

In Post-COVID-19 associated DD in the Fergana region, cardiovascular disease, anemia and arterial hypertension form the core comorbid background, with a female predominance. Compliance with treatment standards ranges from 65.1% to 89.2% across groups and is lowest in men. These patients need a comorbidity-aware approach combined with active pharmacoepidemiological control.

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