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Influenza during COVID-19 pandemic and war in Ukraine

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Background

Events of last three years, which are related with appearance and unprecedented spread of pandemic caused by new coronavirus SARS-CoV-2, beginning from 2020 significantly influence both the circulation of influenza in Ukraine and in the world and for surveillance of this infection. The war that was launched by Russian federation against Ukraine in February 2022 also significantly influenced the dynamics of the influenza epidemic process.

Methods

Clinical and epidemiological information was collected from 9 clinics in four cities which were in different geographical regions. There are: Kyiv (central part), Dnipro (eastern part), Odesa (southern part) and Khmelnytskiy (western part). All specimens were collected from civil persons and were tested for influenza A, B and SARS-CoV-2 viruses by RT-PCR with CDC Influenza SARS-CoV-2 Multiplex Assay Primer and Probe Kit. The number of tested specimens were less than usual in 2020-2021 season due the COVID-19 restrictions measures and less than usual in 2022-2023 due the war. Because the significant part of population was migrated to another countries.

Results

In the 2020-2021 season, through the sentinel surveillance system, we investigated 170 samples from ILI and SARI patients by PCR methods. There were 65 (38.2%) laboratory confirmed SARS-CoV-2 cases, 2 (1.1%) influenza A viruses (unsubtyped) cases, and 1 (0.6%) A(H3) case. There was almost no circulation of influenza viruses during this season.

In 2021-2022 season we investigated 417 samples from ILI and SARI patients by PCR method. In total, 336 (80,6%) samples were positive; among them 241 (71.7%) were SARS-CoV-2 viruses, and 79 (23.5%) were influenza A viruses. Of these, 19 were influenza A (unsubtyped), 55 were A(H3N2), and 5 were influenza B viruses. We also detected 16 cases of other respiratory viruses. We clearly observed that SARS-CoV-2 viruses absolutely dominated in this season.

In the 2022-2023 season 223 samples were tested by PCR. In total, 77 of cases were influenza A (34%), 43 of them were subtypted as A(H3) (56% from all A), 4 were typed as A(H1)pdm09 (5%), and 3 were influenza B viruses (1% from all samples). SARS-CoV-2 viruses were confirmed in 34 cases (15% from all samples). Overall, 70% influenza cases were among children. We explain the fact that during the season 2022 – 2023 the major part of influenza positive cases belonged to children and COVID-19 prevailed among adults because during previous two seasons children had less social contacts and didn't get the flu through the strict quarantine measures and online learning. In 2022 – 2023 season a lot of restriction were removed and as a result children began to get sick. In addition, the course of influenza among children has more distinct clinical symptoms in comparison with COVID-19 with mild or asymptomatic forms. COVID-19 among adults, especially among elderly and persons with chronic pathology has more severe course of disease which leads to higher indexes of registered morbidity.

The most indicative is the change in dynamic of influenza and COVID-19 cases in 2022 – 2023 season. Weekly dynamic of SARI cases and the percentage of laboratory confirmed of influenza and COVID-19 cases in the 2022 – 2023 season is presented in Figure 1.

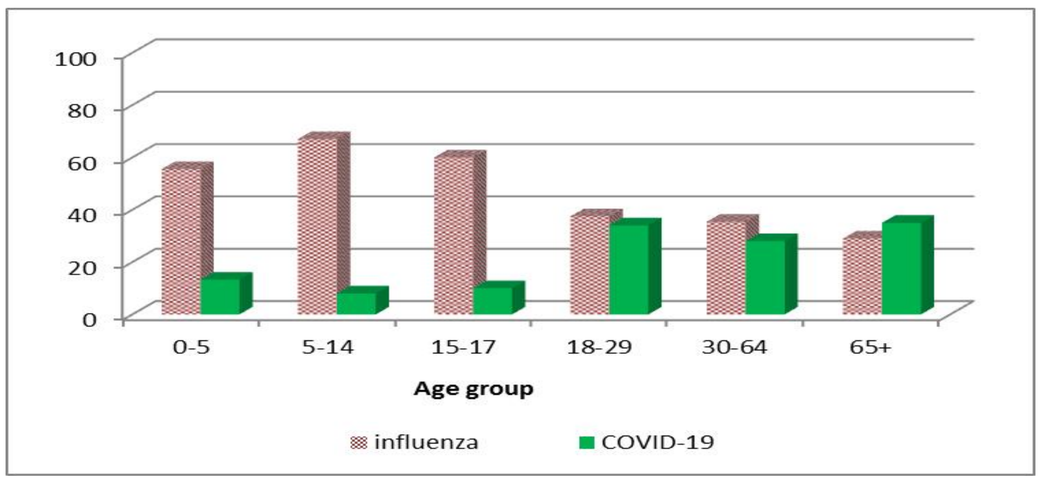

Figure 1. Distribution of influenza and COVID-19 among age group in season 2022-2023

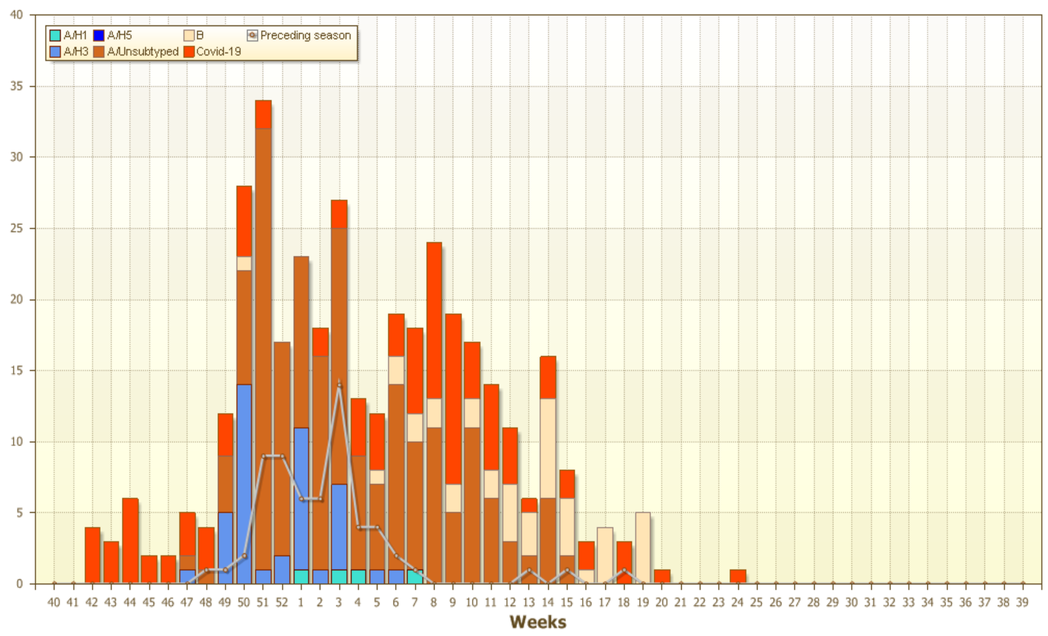

Figure 2. Number of positive samples by influenza type and subtype and SARI cases)

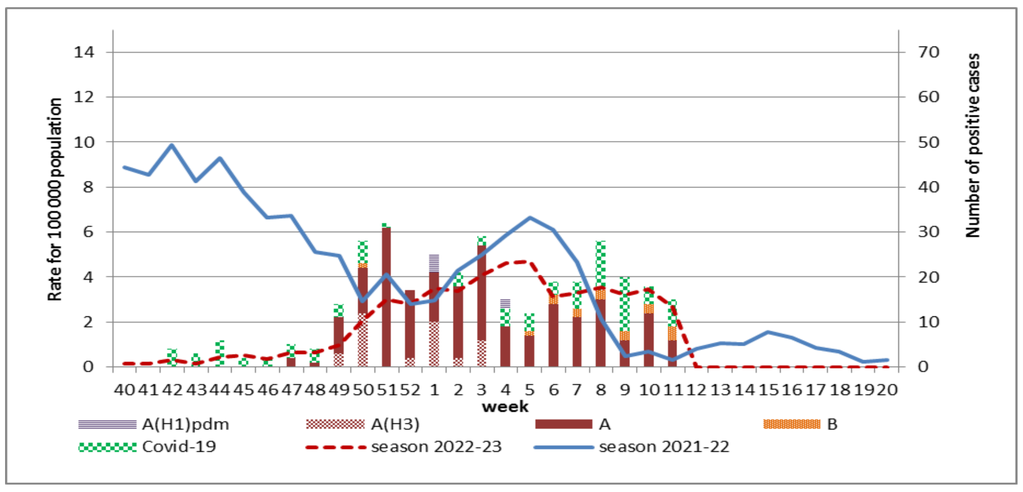

Figure 3. Number of positive influenza and COVID-19 cases and rate for 100,000 population

Conclusions

During last three years due to COVID-19 pandemic and due to Russian war against Ukraine the dynamic of influenza cases changed significantly among population of the country. The war caused the decrease of intensity of influenza and COVID-19 epidemic process due to many factors: decrease in the number of civilians in the country due to migration, destruction of medical facilities due to military actions, decrease in the number of laboratory workers, logistic difficulties of delivery and purchase of laboratory reagents, etc. Influenza cases were registered mostly among children and COVID-19 - mostly among adults in 2022-2023 season. Military actions, which caused intensive migration processes, lead to difficulties in objective assessment of intensive morbidity indexes because of significant population outflow.

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