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Short Communication

Oxford–AstraZeneca COVID-19 vaccine: need of a reasoned and effective vaccine campaign

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A B S T R A C T

Objectives: A strong COVID-19 vaccine campaign is needed to reach the herd immunity and reduce this pandemic infection.

Study design: In the Foch Hospital, France, in February 2021, 451 healthcare workers were vaccinated by a first dose of AstraZeneca vaccine.

Methods: Adverse effects were reported to our pharmaco-vigilance circuit, by an online and anonymous questionnaire following the first weeks of the vaccinal campaign to healthcare workers.

Results: Two hundred seventy-four (60.8%) of them reported multiple adverse effects. Main adverse effects reported were feverish state/chills (65.7%), fatigue/physical discomfort (62.4%), arthralgia/muscle pain (61.0%) and fever (44.5%).

Conclusions: On March 2021 many European countries suspended AstraZeneca vaccine for one week due to safety uncertainty. Thus, confidence in its efficacy is undermined. However, the benefit/risk balance is clearly in favor of vaccination.

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As of March 2021, SARS-CoV-2 infection has caused more than 120 millions infections worldwide with a total death more than 2.8 millions. A massive vaccine campaign was started in numerous countries with a variety of vaccines (Moderna, Pfizer/BionTech, Sputnik V, AstraZeneca). Epidemiologic studies have shown that COVID-19 vaccines should participate in the reduction of this pandemic infection and eventually yield to herd immunity when around 70% of populations get fully vaccinated.1 Thus, in this context of COVID-19 pandemic and growing tensions worldwide regarding healthcare facilities, there is an urgent need for an effective vaccine campaign to reduce the viral spread. A recent study has showed that the Oxford AstraZeneca chimpanzee adenovirus vectored vaccine ChAdOx1 nCoV-19 (AZD1222) efficacy after a single standard dose was 76.0%.2 Unfortunately, on March 15th 2021, many European countries suspended the use of AstraZeneca vaccine as a precaution to investigate the death of a few dozens of patients which developed blood clots in association with deep vein thrombosis (DVT).3 In Europe, only 30 suspect cases of DVT have been reported on March 15th 2021.4 Nevertheless, on March 22nd 2021, the AstraZeneca vaccine campaign has resumed in most countries, but with restricted indications whereas the suspected adverse effects have not been clearly established to be related to vaccination.

Previous studies have reported that this vaccine showed few serious adverse events.5,6 In the Foch Hospital, France, in February 2021, 451 healthcare workers were vaccinated by a first dose of AstraZeneca vaccine. Two hundred seventy-four (60.8%) of them reported multiple adverse effects to our pharmaco-vigilance circuit,
by an online questionnaire following the first weeks of the vaccinal campaign to healthcare workers. The median age of healthcare workers with adverse effects was 33 years (range = 25 to 42), and 210 (76.6%) were female. The median interval for vaccine receipt to symptom onset was 0 day (range = 0 to 1). Main adverse effects reported were feverish state/chills (65.7%), fatigue/physical discomfort (62.4%), arthralgia/muscle pain (61.0%), and fever (44.5%). All adverse effects were reported in Table 1. The symptoms duration was inferior to 48 h in majority. However, these adverse effects remain mild and have relatively little impact on health. The benefit/risk balance is clearly in favor of vaccination.

COVID-19 vaccine hesitancy might represent a major hurdle to achieving herd immunity. Main cited reasons for refusal or hesitancy vaccination were fear of adverse effects and safety. Even if observed adverse effects in the Foch healthcare workers showed high rates, they remain minor in severity. A clear discourse is essential on the benefits of vaccination, its low risks and the impact on regaining normal social, economic, and psychological life for European inhabitants. A recent study has estimated different sce-

| Adverse effects                          | N = 274 | %   |
|-----------------------------------------|---------|-----|
| Feverish state, chills                  | 180     | 65.7|
| Fatigue, physical discomfort            | 171     | 62.4|
| Arthralgia, muscle pain                 | 167     | 61.0|
| Fever                                   | 122     | 44.5|
| Nausea                                  | 69      | 25.2|
| Heavy sweating                          | 60      | 21.9|
| Drowsiness                              | 59      | 21.5|
| Vertigo                                 | 41      | 15.0|
| Diarrhea                                | 17      | 6.2|
| Ganglion                                | 16      | 5.8|
| Vomiting                                | 10      | 3.7|
| Rashes                                  | 6       | 2.2|
| Itching                                 | 5       | 1.8|
| Symptom duration                        |         |     |
| Inferior to 24 h                         | 128     | 46.7|
| 24 h–48 h                               | 99      | 36.1|
| 48 h–72 h                               | 27      | 10.0|
| More than 72 h                          | 20      | 7.2|
| Evolution                               |         |     |
| Improvement in progress                 | 33      | 12.0|
| Healing                                 | 241     | 88.0|

This cessation of vaccine campaign with AstraZeneca vaccine, even of short duration, jeopardized the confidence in vaccines and should participate in delaying the deconfinement of the European countries. Each day of disorder in the programming of COVID-19 vaccine campaign is a major obstacle to achieving the herd immunity and could risks inexorably adding preventable deaths. On Friday March 19th 2021, the French High Authority for Health (HAS) announced that it was recommending AstraZeneca vaccine only for people over the age of 55 years. A decision taken on the basis of the rare cases of DVT which have only been observed in people under 55 years in Europe. The European Medicines Agency (EMA) asks not to ignore the rare atypical events as serious incidents on the 20 million vaccinations in Europe and United Kingdom, which are 18 cerebral venous thrombosis and seven disseminated intravascular coagulations. However, recent studies have shown that AstraZeneca vaccine was not linked to increased risk of blood clots. Due to lack of informations concerning efficacy in the elderly, the vaccine was initially restricted to people under 65 years in France. However, since this suspension episode, only people aged more than 55 years can now obtain a vaccination with AstraZeneca vaccine. General practitioners and pharmacists who had agreed to vaccinate people under 55 years with AstraZeneca vaccine must now review their diary and refer these patients to the vaccination centers that have Pfizer/BionTech or Moderna vaccines. A whole logistic must be reviewed, but which, hopefully, should only marginally slow down the vaccine campaign. In France, availability of mRNA vaccines remains too low and many people are now reluctant to receive the AstraZeneca vaccine. So today, the vaccine strategy remains uncertain and does not allow the vaccination of the greatest number as quickly as possible and this in a safe environment. These changes in vaccine strategy risk further blurring communication around COVID-19 vaccines. Thus, there is an urgent need to deploy an effective vaccine campaign as quickly as possible, but we fear that the multiplication of few adverse effects of the AstraZeneca vaccine will have a detrimental effect on the confidence of specific populations, including healthcare workers, and then, within the general population. Safety and efficacy of COVID-19 vaccines are needed to reassure the population and to achieve an herd immunity.

### Table 1

List of adverse effects reported, after the first dose of AstraZeneca vaccine, by healthcare workers in the Foch hospital, N = 274 (60.8% of the vaccinated healthcare workers).

| Effect                                      | N = 274 | %   |
|---------------------------------------------|---------|-----|
| Previous COVID-19 infection                 | 49      | 17.9|
| Vaccine site injection                      |         |     |
| Right arm                                  | 43      | 15.7|
| Left arm                                   | 231     | 84.3|
| Gender                                     |         |     |
| Female                                     | 210     | 76.6|
| Male                                       | 64      | 23.4|
| Comorbidities                              |         |     |
| Obesity                                    | 18      | 6.6|
| Hypertension                               | 2       | 0.7|
| Others (asthma, migraine, digestive diseases) | 12   | 4.4|

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