Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Public Health 196 (2021) 135–137

Contents lists available at ScienceDirect

Public Health

journal homepage: www.elsevier.com/locate/puhe

Short Communication

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

A. Vallée [a,*], A. Chan-Hew-Wai [b], B. Bonan [b], P. Lesprit [c], F. Parquin [d], É. Catherinot [e], J. Choucair [e], D. Billard [f], C. Amiel-Taieb [g], È. Camps [b], C. Cerf [h], D. Zucman [i], E. Fourn [i]

[a] Department of Clinical Research and Innovation, Foch Hospital, Suresnes, France
[b] Hospital Pharmacy, Foch Hospital, Suresnes, France
[c] Department of Hygiene and Infectious Disease, Foch Hospital, Suresnes, France
[d] Intensive Respiratory Care Department, Foch Hospital, Suresnes, France
[e] Department of Pneumology, Foch Hospital, Suresnes, France
[f] Department of Oncology, Foch Hospital, Suresnes, France
[g] Department of Occupational Health, Foch Hospital, Suresnes, France
[h] Department of Intensive Care, Foch Hospital, Suresnes, France
[i] Department of Internal Medicine, Réseau Ville Hôpital Val de Seine, Foch Hospital, Suresnes, France

ARTICLE INFO

Article history:
Received 23 April 2021
Accepted 25 May 2021
Available online 2 June 2021

Keywords:
COVID-19
COVID-19 vaccine
AstraZeneca vaccine
Adverse effects
Vaccine campaign

ABSTRACT

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.

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,

* Corresponding author.
E-mail address: alexandre.g.vallee@gmail.com (A. Vallée).

https://doi.org/10.1016/j.puhe.2021.05.030

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.[7] Main cited reasons for refusal or hesitancy vaccination were fear of adverse effects and safety.[8] 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 scenario for the repercussions of this vaccine campaign stop on potentially averted death. Faranda et al. estimated that the stop of AstraZeneca vaccine during 7 days could be responsible for an increased risk of death for 130 French people and for 790 Italian people.[9] This increased risk could reach more than 1200 death in France and 9000 deaths in Italy in case of AstraZeneca vaccine campaign stop during one year.[9] This study clearly presented the impact in added and preventable death of such cessation focused on only one vaccine on the general population.

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).

	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%
Adverse effects		
Feverish state, chills	180	65.7%
Fatigue, physical discomfort	171	62.4%
Arthralgia, muscle pain	167	61.0%
Fever	122	44.5%
Inferior to 38.5°C	*69*	*58.5%*
Superior to 38.5°C	*49*	*41.5%*
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.[4] However, recent studies have shown that AstraZeneca vaccine was not linked to increased risk of blood clots.[10] Due to lack of informations concerning efficacy in the elderly, the vaccine was initially restricted to people under 65 years in France.[2] 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.

Author statements

Ethical approval

Not applicable due to the anonymous aspect of online questionnaire.

Funding

No funding.

Competing interests

The authors declare no conflict of interest with his work.

References

1. Fontanet A, Cauchemez S. COVID-19 herd immunity: where are we? *Nat Rev Immunol* 2020 Oct;**20**(10):583–4.
2. Voysey M, Costa Clemens SA, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Single-dose administration and the influence of the timing of the booster dose on immunogenicity and efficacy of ChAdOx1 nCoV-19 (AZD1222) vaccine: a pooled analysis of four randomised trials. *Lancet Lond Engl* 2021 Feb 19, 6;**397**(10277):881–91.
3. Cushman M. Epidemiology and risk factors for venous thrombosis. *Semin Hematol* 2007 Apr;**44**(2):62–9.

4. PINHO AC. *COVID-19 Vaccine AstraZeneca: PRAC investigating cases of thromboembolic events - vaccine's benefits currently still outweigh risks Update [Internet]*. European Medicines Agency; 2021 [cited 2021 Mar 29]. Available from: https://www.ema.europa.eu/en/news/covid-19-vaccine-astrazeneca-prac-investigating-cases-thromboembolic-events-vaccines-benefits.
5. Voysey M, Clemens SAC, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. *Lancet Lond Engl* 2021 Jan 9;**397**(10269):99–111.
6. Folegatti PM, Ewer KJ, Aley PK, Angus B, Becker S, Belij-Rammerstorfer S, et al. Safety and immunogenicity of the ChAdOx1 nCoV-19 vaccine against SARS-CoV-2: a preliminary report of a phase 1/2, single-blind, randomised controlled trial. *Lancet Lond Engl* 2020 Aug 15;**396**(10249):467–78.
7. Anderson RM, Vegvari C, Truscott J, Collyer BS. Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. *Lancet* 2020 Nov 21;**396**(10263):1614–6.
8. Schwarzinger M, Watson V, Arwidson P, Alla F, Luchini S. COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics. *Lancet Public Health* 2021 Feb 5;**6**(4):e210–21. https://doi.org/10.1016/S2468-2667(21)00012-8.
9. Faranda D, Alberti T, Arutkin M, Lembo V, Lucarini V. Interrupting vaccination policies can greatly spread SARS-CoV-2 and enhance mortality from COVID-19 disease: The AstraZeneca case for France and Italy. *Chaos* 2021 Apr **31**(4):041105.
10. Mahase E. Covid-19: AstraZeneca vaccine is not linked to increased risk of blood clots, finds European Medicine Agency. *BMJ* 2021 Mar 19;**372**:n774.