

Impact and Repercussion of the SARS-CoV-2 Pandemic in the Assisted Reproduction Units in Spain

Koldo Carbonero Martínez

Gynecology and Obstetrical Hospital Quirónsalud Donostia, San Sebastián, Spain

Abstract: Summary: During the months of March, April and May of 2020 the Spanish Assisted Reproduction Units had to stop their assistance activity due to the health situation caused by the COVID-19 pandemic. Its reactivation has required a substantial modification in the way of working in them, changing the assistance routines and designing protocols that guarantee, as much as possible, the security of patients and staff of the centers devoted to reproductive medicine. It is analyzed the medical and biological arguments that have been assessed in order to advise the reopening of the Assisted Reproduction Units within the current context of the pandemic in Spain and the European Union.

PRINCIPAL

In Spain, we suffer, as in great part of Europe, a relevant demographic problem with a progressive decrease of births and, therefore, an ageing population (Spanish birth rate: 1.34 children per woman in 2017).

This situation is worsened due to a relevant trend in the delay of the age for the start of the childbearing, which is currently 32 years old. ⁽¹⁾

These facts, together with other socio-economic factors, cause infertility to be a Public Health issue that affects around the 20% of the population in reproductive age.

In our country, there are more than 300 Assisted Reproduction units, public and private, that provide more than 150.000 cycles of treatment per year and are responsible for the birth of more than 8% of the yearly newborns. ⁽²⁾

In the European context, Spain is the country with most cycles of assisted reproduction techniques provided yearly, in proportion to the millions of inhabitants of its population.

On the 16th March 2020, the Spanish Government declares the state of emergency and health alert in the whole national territory, which leads to a containment of the population in their homes and the appointment of a sole health authority (Ministry of Health of the Spanish central government). ⁽³⁾

The terms of the state of emergency are of obligatory compliance and they substantially restrict most of the population's human rights, blocking the people's mobility in any means of transport and paralyzing all working activity considered as non-essential.

The health alert establishes a single control liable for the management of all health resources (both public and private) and this position corresponds to the Minister of Health, Consumer Affairs and Social Welfare of the Spanish

Government. From that moment, all health managers of the different regional governments, which make the Spanish State, work under its authority and from Madrid it is coordinated all the health management of the country.

With these measures it is intended to stop the infections of the COVID-19 and prevent the collapse of hospitals and their Intensive Care Units.

In spite of these restrictive measures, Spain has registered very negative epidemiologic data during the pandemic, in terms of both the number of people infected and the number of deaths per million inhabitants. ⁽⁴⁾

EFFECT OF THE PANDEMIC SARS-COV-2 IN THE SPANISH ASSISTED REPRODUCTION UNITS

Since the 16th March 2020, according to the Ministerial Order published in the Official State Gazette, all Assisted Reproduction Units had to stop all its assistance activity, conclude the initiated five/icsi treatment cycles without doing embryo transfers (vitrifying embryos), stop all insemination treatments and halt all in-person medical consultations.

From that date, no new treatment cycles could be started, excluding the preservation of fertility for oncological reasons.

With regard to the embryology laboratories, it was not allowed to carry out neither studies nor treatments; only maintenance tasks were allowed in order to guarantee that the gametes and embryos banks were in perfect conditions and did not suffer any damage.

The abrupt stop of the assistance activity has had serious consequences in different levels.

Firstly, at a patient's level, since they suffered the interruption of their treatments in a totally unexpected way and, as already known, it is a vulnerable population with relevant psychological affectation, so the delay in the therapies implies an additional degree of emotional pressure, worsened by the uncertainty about its reactivation.

*Address correspondence to this author at the President of the Koldo Servicio of Ginecología and Obstetricia Hospital Quirónsalud Donostia, San Sebastián, Spain; Email: koldo.carbonero@gmail.com

From a working perspective, it has created an unemployment situation in all the sectors of the reproduction centers, whether between the doctors or not. Many of the private Spanish centers depend to a great extent on the arrival of foreign patients, circumstance which worsens their working situation.

The centers that depend on the public healthcare have been forced to increase notable their waiting lists, with the direct damage for their users.

We all know that the functional life of ovaries is limited by the age and the loss of follicles that is inexorable with the age, so the more the reproduction treatments are postponed, the worse will be the results.

CONTEXT WITHIN THE REACTIVATION OF THE ASSISTANCE ACTIVITY HAS TAKEN PLACE IN THE SPANISH ASSISTED REPRODUCTION UNITS

At the end of the month of April 2020, the epidemiologic data concerning COVID-19 in Spain, started to be favorable, both in the number of infections/per day and in the number of deaths/per day and the Intensive Care Units stopped being collapsed. ⁽⁵⁾

Due to said reasons, the Spanish medical societies that are related directed with the Reproduction Medicine (SEGO-ASEBIR-SEF), published informative documents, directed to the health authorities, in order to be able to reactivate the Assisted Reproduction Units, suggesting a security protocols and different recommendations that guarantee, as far as possible, the security of patients and staff.

^(6, 7)

The ESRHE publishes a document dated 23.04.2020 with recommendations to reactivate the European reproduction Units and its terms match with the ones by the Spanish scientific societies. ⁽⁸⁾

There is an agreement on the general proposal, that is, a reopening of the reproduction centers is advised, without limits in their activity, but establishing assistance protocols of strict compliance in order to prevent Coronavirus infection.

The reasons used to come to these conclusions are diverse, being the most important ones biological and epidemiological.

The virus causing acute respiratory syndrome 2, SARS-CoV-2, is a virus with a positive and single-stranded RNA genome. And within the Coronavirus groups, it belongs to the beta genome group. ⁽¹⁶⁾

Coronavirus COVID-19 infects especially cells of the lung alveolar epithelium and the recipient that allows its entrance is the enzyme that transforms the angiotensin-2 (ACE2) and, unlike other virus, it cannot enter into the cells that do not have it on their membrane; since neither sperms nor oocytes or

the cells from the ovarian granulosa theca have this recipient, the risk of Coronavirus transmission between said cells seems unlikely. ⁽¹⁷⁾

A press release issued by the WHO, describes that pregnant women do not seem to have more risk of grave evolution if they are infected by COVID-19 in comparison to women of the same age. And their clinical manifestations and treatment do not differ either from this population group. ⁽¹⁸⁾

The embryology laboratory areas have for many years, biological contingency levels type 2 and type 3, what means that they work with security protocols against virus, so adapting to new protocols against COVID-19 was quite easy and acceptable.

^(9, 10, 11)

Finally, the vertical transmission of Covid-19 (maternal-fetal) during the III trimester of pregnancy, was not definitively demonstrated in any of the studies published in that dates.

^(12, 13, 14)

The patients are widely informed of the special circumstances of this new context and they are warned, before starting their treatments, about the limits that specialists in reproduction medicine have, with regards to the limited knowledge of the behavior of the virus inside and outside the pregnancy, so as the possible changes in the protocols depending on the new known data. ⁽¹⁵⁾

The team responsible for an assisted reproduction treatment will have to carry a rigorous assessment of the risk-benefit balance, before advising their patients the beginning of cycles of the different techniques and warn them about the current limits in the knowledge about Coronavirus COVID-19 of the scientific community.

The Spanish Ministry of Health, after assessing the opinion provided in the different documents from the Spanish and European scientific societies, decided to allow the reopening of the reproduction centers, provided that specific security protocols were established.

From 11.05.2020 on, most of the Spanish Assisted Reproduction Units started their activity in a normal way and fulfilling the established security protocols.

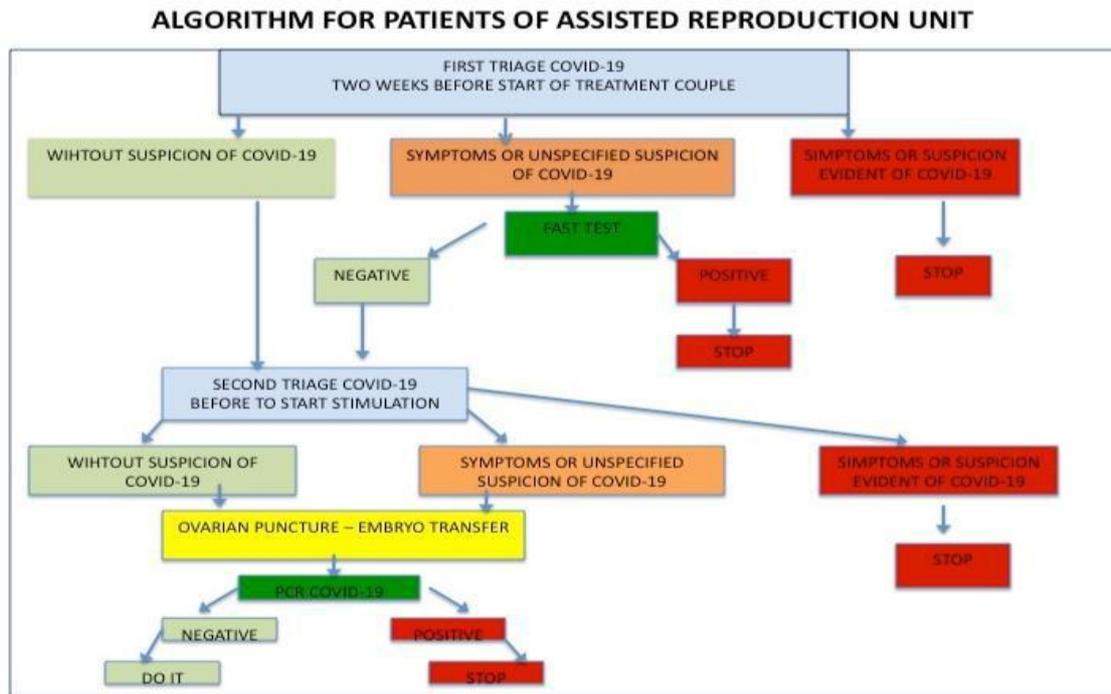
SECURITY PROTOCOLS AGAINST COVID-19 ESTABLISHED IN THE ASSISTED REPRODUCTION UNIT OF THE SAN SEBASTIÁN QUIRONSALUD HOSPITAL (SPAIN)

The hospital has established a general protocol against COVID-19 similar to other Spanish hospital centers, regardless if they have admitted patients affected by viremia.

But the assisted reproduction Unit has established a specific protocol for the Staff and patients.

Protocol for the Staff: all members will have to be serologically tested by SARS-CoV-2 and they will only be allowed to carry their activity if they are serologically negative or with acquired immunity.

Algorithm of the protocol for patients:



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I hope to collaborate in the field of reproductive medicine and not disappoint the rest of the collaborators.

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