



Clinical trial results:

Influence of sevoflurane and propofol on maximum muscular strength, speed of contraction and relaxation, in humans: A pilot study.

Summary

| | |
|--------------------------|----------------|
| EudraCT number | 2022-003737-19 |
| Trial protocol | BE |
| Global end of trial date | 27 April 2023 |

Results information

| | |
|-----------------------------------|--|
| Result version number | v1 (current) |
| This version publication date | 27 July 2024 |
| First version publication date | 27 July 2024 |
| Summary attachment (see zip file) | Statistical Methodology (2022-003737-19 - Statistical Methodology.pdf) |

Trial information

Trial identification

| | |
|-----------------------|------------------------|
| Sponsor protocol code | CHUB-ITF-sevo-propofol |
|-----------------------|------------------------|

Additional study identifiers

| | |
|------------------------------------|---|
| ISRCTN number | - |
| ClinicalTrials.gov id (NCT number) | - |
| WHO universal trial number (UTN) | - |

Notes:

Sponsors

| | |
|------------------------------|--|
| Sponsor organisation name | CHU Brugmann |
| Sponsor organisation address | 4 Place Arthur Van Gehuchten , Brussels, Belgium, 1020 |
| Public contact | Anesthesiology Department, CHU Brugmann, 32 24773996, Christianerebecca.DZECHI@chu-brugmann.be |
| Scientific contact | Anesthesiology Department, CHU Brugmann, 32 24773996, Christianerebecca.DZECHI@chu-brugmann.be |

Notes:

Paediatric regulatory details

| | |
|--|----|
| Is trial part of an agreed paediatric investigation plan (PIP) | No |
| Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial? | No |
| Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial? | No |

Notes:

Results analysis stage

| | |
|--|---------------|
| Analysis stage | Final |
| Date of interim/final analysis | 27 April 2023 |
| Is this the analysis of the primary completion data? | Yes |
| Primary completion date | 27 April 2023 |
| Global end of trial reached? | Yes |
| Global end of trial date | 27 April 2023 |
| Was the trial ended prematurely? | No |

Notes:

General information about the trial

Main objective of the trial:

In this study, we want to measure the influence of sevoflurane and propofol on the maximum force, maximum speed of contraction and relaxation at the adductor pollicis (muscle of the thumb).

Protection of trial subjects:

Sevoflurane is an anesthetic gas routinely used during surgical procedures to maintain anesthesia in patients. Propofol is an intravenous anesthesia product used either to induce anesthesia or to maintain anesthesia during surgery. These two drugs are used in almost all standard of care anesthesia.

The study intervention consists of muscle strength measurement using the ITF (Isometric Thumb Force) device. This involves pushing with the thumb on a sensor that measures the force developed. This procedure does not cause pain or distress.

Background therapy: -

Evidence for comparator: -

| | |
|---|-----------------|
| Actual start date of recruitment | 10 January 2023 |
| Long term follow-up planned | No |
| Independent data monitoring committee (IDMC) involvement? | No |

Notes:

Population of trial subjects

Subjects enrolled per country

| | |
|--------------------------------------|-------------|
| Country: Number of subjects enrolled | Belgium: 48 |
| Worldwide total number of subjects | 48 |
| EEA total number of subjects | 48 |

Notes:

Subjects enrolled per age group

| | |
|---|---|
| In utero | 0 |
| Preterm newborn - gestational age < 37 wk | 0 |
| Newborns (0-27 days) | 0 |
| Infants and toddlers (28 days-23 months) | 0 |
| Children (2-11 years) | 0 |
| Adolescents (12-17 years) | 0 |

| | |
|----------------------|----|
| Adults (18-64 years) | 46 |
| From 65 to 84 years | 2 |
| 85 years and over | 0 |

Subject disposition

Recruitment

Recruitment details:

Patients were approached at the outpatient pre-anesthetic visit of the CHU Brugmann Hospital (Brussels, Belgium). The patient could decide up to the day of their surgery to participate in the study or not. Surgery dates ranged from 06 February 2023 till 27 April 2023.

Pre-assignment

Screening details:

Patients were screened at the outpatient pre-anesthetic visit of the CHU Brugmann Hospital (Brussels, Belgium) for inclusion/exclusion criteria. ICF was given and the patient could decide up to the day of their surgery to participate in the study or not.

Period 1

| | |
|------------------------------|--------------------------------|
| Period 1 title | Overall trial (overall period) |
| Is this the baseline period? | Yes |
| Allocation method | Randomised - controlled |
| Blinding used | Double blind ^[1] |
| Roles blinded | Subject, Assessor |

Blinding implementation details:

Patients are randomized in a 1:1 ration (block randomization of 4) to receive either sevoflurane or propofol for maintenance of anesthesia. Groups are put in sealed and opaque envelopes, opened after inclusion by the anesthesiologist in charge of the patient. The member of the study team explaining the procedure, and making the measurements, is blinded to the treatment group.

Arms

| | |
|------------------------------|-------------|
| Are arms mutually exclusive? | Yes |
| Arm title | Sevoflurane |

Arm description: -

| | |
|--|---------------------------|
| Arm type | Experimental |
| Investigational medicinal product name | Sevorane |
| Investigational medicinal product code | |
| Other name | |
| Pharmaceutical forms | Inhalation vapour, liquid |
| Routes of administration | Inhalation use |

Dosage and administration details:

4%, inhalation use

| | |
|------------------|----------|
| Arm title | Propofol |
|------------------|----------|

Arm description: -

| | |
|--|---------------------------------|
| Arm type | Experimental |
| Investigational medicinal product name | Diprivan |
| Investigational medicinal product code | |
| Other name | |
| Pharmaceutical forms | Emulsion for injection/infusion |
| Routes of administration | Infusion |

Dosage and administration details:

10mg/kg/h, infusion

Notes:

[1] - The roles blinded appear to be inconsistent with a double blind trial.

Justification: This is an assessor-blinded trial. The patient is blind to the anesthetic used (sevoflurane or propofol). The anesthesiologist in charge of the patient is aware of the anesthetic used, but the staff performing the measurements of maximum force, maximum contraction speed and maximum relaxation speed of the adductor pollicis (muscle of the thumb) is blinded.

| Number of subjects in period 1 | Sevoflurane | Propofol |
|---------------------------------------|-------------|----------|
| Started | 24 | 24 |
| Completed | 20 | 20 |
| Not completed | 4 | 4 |
| Adverse event, non-fatal | - | 1 |
| Anesthesia duration too short | 3 | - |
| Protocol deviation | 1 | 3 |

Baseline characteristics

Reporting groups

| | |
|--------------------------------|-------------|
| Reporting group title | Sevoflurane |
| Reporting group description: - | |
| Reporting group title | Propofol |
| Reporting group description: - | |

| Reporting group values | Sevoflurane | Propofol | Total |
|---|-------------|----------|-------|
| Number of subjects | 24 | 24 | 48 |
| Age categorical | | | |
| Units: Subjects | | | |
| In utero | 0 | 0 | 0 |
| Preterm newborn infants (gestational age < 37 wks) | 0 | 0 | 0 |
| Newborns (0-27 days) | 0 | 0 | 0 |
| Infants and toddlers (28 days-23 months) | 0 | 0 | 0 |
| Children (2-11 years) | 0 | 0 | 0 |
| Adolescents (12-17 years) | 0 | 0 | 0 |
| Adults (18-64 years) | 22 | 24 | 46 |
| From 65-84 years | 2 | 0 | 2 |
| 85 years and over | 0 | 0 | 0 |
| Gender categorical | | | |
| Units: Subjects | | | |
| Female | 14 | 14 | 28 |
| Male | 10 | 10 | 20 |

End points

End points reporting groups

| | |
|--------------------------------|-------------|
| Reporting group title | Sevoflurane |
| Reporting group description: - | |
| Reporting group title | Propofol |
| Reporting group description: - | |

Primary: Preoperative maximum force

| | |
|------------------------|---|
| End point title | Preoperative maximum force ^[1] |
| End point description: | |

| | |
|---|---------|
| End point type | Primary |
| End point timeframe: | |
| Before anesthesia by either sevoflurane or propofol | |

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|------------------------|------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: newton | | | | |
| median (inter-quartile range (Q1-Q3)) | 44.46 (32.22 to 64.94) | 45.02 (33.05 to 63.82) | | |

Statistical analyses

No statistical analyses for this end point

Primary: Postoperative maximum force

| | |
|------------------------|--|
| End point title | Postoperative maximum force ^[2] |
| End point description: | |

| | |
|--|---------|
| End point type | Primary |
| End point timeframe: | |
| After anesthesia by either sevoflurane or propofol | |

Notes:

[2] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|------------------------|------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: newton | | | | |
| median (inter-quartile range (Q1-Q3)) | 51.99 (33.39 to 64.79) | 42.40 (35.37 to 56.63) | | |

Statistical analyses

No statistical analyses for this end point

Primary: Postoperative maximum contraction speed

| | |
|-----------------|--|
| End point title | Postoperative maximum contraction speed ^[3] |
|-----------------|--|

End point description:

| | |
|----------------|---------|
| End point type | Primary |
|----------------|---------|

End point timeframe:

After anesthesia by either sevoflurane or propofol

Notes:

[3] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|---------------------------|---------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: newton/second | | | | |
| median (inter-quartile range (Q1-Q3)) | 224.06 (140.47 to 414.52) | 177.10 (136.36 to 252.98) | | |

Statistical analyses

No statistical analyses for this end point

Primary: Preoperative maximum relaxation speed

| | |
|-----------------|--|
| End point title | Preoperative maximum relaxation speed ^[4] |
|-----------------|--|

End point description:

| | |
|----------------|---------|
| End point type | Primary |
|----------------|---------|

End point timeframe:

Before anesthesia by either sevoflurane or propofol

Notes:

[4] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|------------------------------|------------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: newton/second | | | | |
| median (inter-quartile range (Q1-Q3)) | -416.79 (-634.77 to -279.31) | -486.61 (-677.49 to -408.78) | | |

Statistical analyses

No statistical analyses for this end point

Primary: Postoperative maximum relaxation speed

| | |
|-----------------|---|
| End point title | Postoperative maximum relaxation speed ^[5] |
|-----------------|---|

End point description:

| | |
|----------------|---------|
| End point type | Primary |
|----------------|---------|

End point timeframe:

After anesthesia by either sevoflurane or propofol

Notes:

[5] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|------------------------------|------------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: newton/second | | | | |
| median (inter-quartile range (Q1-Q3)) | -517.10 (-719.99 to -307.48) | -468.50 (-609.88 to -309.32) | | |

Statistical analyses

No statistical analyses for this end point

Primary: Preoperative maximum contraction speed

| | |
|-----------------|---|
| End point title | Preoperative maximum contraction speed ^[6] |
|-----------------|---|

End point description:

| | |
|----------------|---------|
| End point type | Primary |
|----------------|---------|

End point timeframe:

After anesthesia by either sevoflurane or propofol

Notes:

[6] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: The statistical analysis is detailed in the pdf file in annex.

There was no statistically significant differences, neither in the intragroup analysis (pre versus postoperative values in each group), nor in the intergroup analysis (propofol versus sevoflurane).

| End point values | Sevoflurane | Propofol | | |
|---------------------------------------|---------------------------|---------------------------|--|--|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 20 | 20 | | |
| Units: Newton/second | | | | |
| median (inter-quartile range (Q1-Q3)) | 223.49 (124.48 to 390.58) | 178.19 (140.47 to 341.93) | | |

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Overall trial

| | |
|-----------------|------------|
| Assessment type | Systematic |
|-----------------|------------|

Dictionary used

| | |
|-----------------|--------|
| Dictionary name | MedDRA |
|-----------------|--------|

| | |
|--------------------|------|
| Dictionary version | 25.1 |
|--------------------|------|

Reporting groups

| | |
|-----------------------|-------------|
| Reporting group title | Sevoflurane |
|-----------------------|-------------|

Reporting group description: -

| | |
|-----------------------|----------|
| Reporting group title | Propofol |
|-----------------------|----------|

Reporting group description: -

| Serious adverse events | Sevoflurane | Propofol | |
|---|----------------|----------------|--|
| Total subjects affected by serious adverse events | | | |
| subjects affected / exposed | 0 / 24 (0.00%) | 0 / 24 (0.00%) | |
| number of deaths (all causes) | 0 | 0 | |
| number of deaths resulting from adverse events | 0 | 0 | |

Frequency threshold for reporting non-serious adverse events: 5 %

| Non-serious adverse events | Sevoflurane | Propofol | |
|---|----------------|----------------|--|
| Total subjects affected by non-serious adverse events | | | |
| subjects affected / exposed | 0 / 24 (0.00%) | 1 / 24 (4.17%) | |
| Nervous system disorders | | | |
| Anxiety | | | |
| subjects affected / exposed | 0 / 24 (0.00%) | 1 / 24 (4.17%) | |
| occurrences (all) | 0 | 1 | |

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported