ARTIGO 1

NEONATAL HIPOTERMIA AND NEONATAL ANOXIA

Introduction

Therapeutic hypothermia is a neuroprotective strategy that reduces mortality and disability of newborns with hypoxic-ischemic encephalopathy from perinatal asphyxia. The therapy should start within the first 6 hours after birth and consists of lowering the body temperature of neonates to an average of 33°C to 34°C for 72 hours.^{4,6,7} Hypothermia reduces brain metabolism by approximately 5 % for every 1°C decrease in body temperature, which delays the onset of cellular anoxic depolarization⁸.

Objective

The goal of this study is to report two clinical cases describing the effects of neonatal hypothermia in babies with perinatal asphyxia, and the motor development in a follow-up program after hospital discharge.

Methods

This is a retrospective case report involving two children diagnosed with hypoxic-ischemic encephalopathy due to neonatal asphyxia and submitted to a hypothermia protocol in the Neonatal Intensive Care Unit (NICU). Data regarding the prenatal, perinatal, and postnatal periods were collected from the children's medical records. Subsequently, an interview with the guardian was conducted using a semi-structured maternal history guide, including general information about the mother and baby. The children were followed up in the high-risk outpatient clinic and evaluated using the Hammersmith Neurological Examination (HINE), motor development was assessed using the Alberta Infant Motor Scale [AIMS], and the Denver II screening test. The instruments were administered according to the recommendations in the assessment manuals and administered by trained evaluators. The study was approved by the university's Research Ethics Committee.

Case description

Newborn, woman, born by cesarean section at 37 weeks of gestational age, weighing 3.055g and length of 46,5cm. The patient presented an Apgar score of 5 and 6 in the first and fifth minutes, respectively, requiring a cycle of PPV. The infant evolved with respiratory distress; thus, 20% oxygen was delivered for 1 (one) hour, followed by 3 (three) hours of CPAP. After 4 hours of life, the patient presented worsening of respiratory distress and presence of cyanosis in the extremities, was intubated, and during intubation she presented an episode of hyperextension of the upper limbs, internal rotation of the wrists, and seizure. Due to the tests, which showed perinatal asphyxia, the therapeutic hypothermia protocol was started, turning off the crib until the patient reached the ideal temperature of 32° - 35°C. The patient was then monitored every 20 minutes, and remained in the cooled crib for 74 (seventy-four) hours. The baby was diagnosed with late neonatal sepsis in the Neonatal Intensive Care Unit and required 6 (six) days of antibiotics. Transfontanellar ultrasound was performed, which indicated a reduction of the sulci and diffuse hyperechogenicity. After seven days, a Cranial Magnetic Resonance (CMR) demonstrated a sequelae of severe

perinatal hypoxic-ischemic event. The patient remained 12 days in the Neonatal Intensive Care Unit (NICU) and 10 days in the ward, being discharged with a diet of breast and milk formula. At the neurological examination upon discharge, the patient presented mild generalized hypotonia and primitive and symmetrical reflexes (search reflex, palm and plantar handgrip, and complete moro and tonic-cervical reflexes were present). Currently, the child has a chronological age of 3 years and 3 months, and evaluations conducted by the physiotherapy team at the pediatric outpatient clinic demonstrated motor development within the normal range for the age

Conclusion

The cases presented involved two children diagnosed with hypoxic-ischemic encephalopathy due to perinatal asphyxia who received a therapeutic protocol of hypothermia for 74 hr with strict monitoring of body temperature. They were followed up at the outpatient clinic by the multidisciplinary team, and in the assessment of motor development, it was observed that both patients had normal motor development. The results obtained are favorable for the use of the neonatal hypothermia protocol as a "neuroprotective intervention" in babies with perinatal asphyxia, minimizing and preventing sequelae in children's motor development

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Regras até agora:

- 1. Sem vírgulas antes de 'e' quando for conjunção;
- 2. Usar 'that' ao se referir a um objeto ou conceito;
- 3. Usar adjetivos somente antes de substantivos;
- 4. Consistência ao usar números: somente por escrito ou somente numerais;
- 5. Escolher sinonimos mais formais;
- 6. Corrigir erros com relação à gramática das palavras, como letras a mais, digitações incorretas, etc;
- 7. Usar letras maiúsculas somente em nomes;
- 8. Conjugar verbos corretamente, se atentando ao tempo verbal da frase, e levando em conta o contexto;
- 9. Não utilizar substantivos quando o sujeito da frase está descrevendo uma ação substitua pelo verbo correto;
- 10. Contextualizações (como frases adverbiais de tempo e espaço) deslocadas na frase devem ser separadas do resto por vírgula;
- 11. Quando relatando uma sequencia de acontecimentos, os separe por vírgulas
- 12. Não use aspas se a frase não for uma citação direta;
- 13. Utilize a conjunção correta de acordo com o contexto. Julgue baseado na palavra anterior e na seguinte;

Prompt 1:

Corrija esse texto {text}, considerando as seguintes instruções:

O texto deve manter linguagem formal, ser direto e evitar redundâncias e expressões de linguagem. Erros de digitação devem ser corrigidos. As frases devem manter o mesmo tempo verbal (em geral, passado simples), de acordo com o contexto. A concordância entre sujeito e verbo deve ser mantida. Vírgulas devem ser usadas em enumerações de ações ou para separação de partes delocadas da frase, como expressões adverbiais. Manter letras maiúsculas somente em nomes. Usar corretamente preposições. Usar aspas somente para citações diretas.

Resultado:

(diferenças entre a minha correção e o resultado dado pela IA estão destacadas)

- ChatGPT:

Neonatal Hypothermia and Neonatal Anoxia

Introduction

Therapeutic hypothermia is a neuroprotective strategy that reduces mortality and disability in newborns with hypoxic-ischemic encephalopathy resulting from perinatal

asphyxia. The therapy should begin within the first six hours after birth and consists of reducing the neonate's body temperature to an average of 33°C to 34°C for 72 hours. Hypothermia decreases brain metabolism by approximately 5% for every 1°C reduction in body temperature, delaying the onset of cellular anoxic depolarization.

Objective

This study aimed to report two clinical cases describing the effects of neonatal hypothermia in infants with perinatal asphyxia and their motor development during follow-up after hospital discharge.

Methods

This retrospective case report involved two children diagnosed with hypoxic-ischemic encephalopathy due to neonatal asphyxia and treated with a hypothermia protocol in the Neonatal Intensive Care Unit (NICU). Data from the prenatal, perinatal, and postnatal periods were collected from medical records. Subsequently, an interview was conducted with the guardian using a semi-structured maternal history guide containing general information about the mother and child.

The children were followed up in a high-risk outpatient clinic and evaluated using the Hammersmith Neurological Examination (HINE), the Alberta Infant Motor Scale (AIMS), and the Denver II screening test. All instruments were applied according to the corresponding assessment manuals by trained evaluators. The study was approved by the university's Research Ethics Committee.

Case Description

The patient was a female newborn delivered by cesarean section at 37 weeks of gestational age, weighing 3,055 g and measuring 46.5 cm in length. The Apgar scores were 5 and 6 at the first and fifth minutes, respectively, requiring a cycle of positive pressure ventilation (PPV). The infant developed respiratory distress and received 20% oxygen for one hour, followed by three hours of continuous positive airway pressure (CPAP).

After four hours of life, the patient's respiratory distress worsened, and cyanosis appeared in the extremities. She was intubated and, during the procedure, presented an episode of upper limb hyperextension, wrist internal rotation, and seizure. As the tests indicated perinatal asphyxia, the therapeutic hypothermia protocol was initiated by turning off the incubator until the patient reached the target temperature of 32°C to 35°C. Monitoring was performed every 20 minutes, and hypothermia was maintained for 74 hours.

During her stay in the NICU, the patient was diagnosed with late neonatal sepsis and received antibiotic therapy for six days. A transfontanellar ultrasound revealed sulcal reduction and diffuse hyperechogenicity. After seven days, cranial magnetic resonance imaging (MRI) demonstrated sequelae of a severe perinatal hypoxic-ischemic event. The patient remained in the NICU for 12 days and in the ward for 10 days, being discharged with breastfeeding and milk formula feeding.

At discharge, the neurological examination showed mild generalized hypotonia and symmetric primitive reflexes (search, palmar and plantar grasp, Moro, and tonic neck reflexes). Currently, at three years and three months of chronological age, evaluations by the physiotherapy team at the pediatric outpatient clinic demonstrate motor development within the normal range for age.

Conclusion

The cases involved two children diagnosed with hypoxic-ischemic encephalopathy due to perinatal asphyxia who underwent a therapeutic hypothermia protocol for 74 hours with strict body temperature monitoring. Both were followed up in the outpatient clinic by a multidisciplinary team. Motor development assessments indicated normal motor performance for age in both cases. The results support the use of the neonatal hypothermia protocol as a neuroprotective intervention in infants with perinatal asphyxia, reducing and preventing sequelae in motor development.

Avaliação: no geral, o texto se manteve o mesmo. A formalidade foi respeitada e o tom se manteve técnico. As correções foram feitas corretamente, e apenas as estruturas das frases foram alteradas, com o significado permanecendo o mesmo. O texto ficou inclusive mais resumido e claro em certas partes, então considerei esse prompt bem efetivo.

- Gemini:

hipotermia neonatal e anoxia neonatalintroduçãoa hipotermia terapêutica é uma estratégia neuroprotetora que reduz a mortalidade e a incapacidade de recém-nascidos com encefalopatia hipóxico-isquêmica decorrente da asfixia perinatal, a terapia deve começar dentro das primeiras seis horas após o nascimento e consiste em reduzir a temperatura corporal dos neonatos (média de 33° a 34° por 72 horas 4,6,7 a hipotermia reduziu o metabolismo cerebral em aproximadamente 5% para cada \$1^{\circ}c\$ de diminuição da temperatura corporal, o que atrasou o início da despolarização celular anóxica\$^{8}\$.objetivoo objetivo deste estudo foi relatar dois casos clínicos que descreveram os efeitos da hipotermia neonatal em bebês com asfixia perinatal e o desenvolvimento motor em um programa de acompanhamento após hospitalar.métodoseste é um relato de caso retrospectivo que envolveu duas criancas com diagnóstico de encefalopatia hipóxico-isquêmica devido à asfixia neonatal e submetidas a um protocolo de hipotermia na unidade de terapia intensiva neonatal (utin). dados relativos aos períodos pré-natal, perinatal e pós-natal foram coletados dos prontuários médicos das crianças, posteriormente, realizou-se uma entrevista com a responsável utilizando um guia de história materna semiestruturado, incluindo informações gerais sobre a mãe e o bebê. as crianças foram acompanhadas no ambulatório de alto risco e avaliadas por meio do exame neurológico de hammersmith (hine), da avaliação do desenvolvimento motor utilizando a escala motora infantil alberta [aims] e do teste de triagem denver ii. os instrumentos foram administrados de acordo com as recomendações nos manuais de avaliação e foram aplicados por avaliadores treinados. o estudo foi aprovado pelo comitê de ética em pesquisa da universidade.descrição do casorecém-nascido, do sexo feminino, nasceu de parto cesáreo com 37 semanas de idade gestacional, pesando \$3.055g\$ e com \$46,5cm\$ de comprimento. a paciente apresentou escores de apgar de 5 e 6 no primeiro e quinto minutos, respectivamente, necessitando de um ciclo de ventilação com pressão positiva (vpp). a criança evoluiu com desconforto respiratório; assim, administrou-se oxigênio a 20% por uma hora, seguido de três horas de cpap, após quatro horas de vida, a paciente apresentou piora do desconforto respiratório e cianose nas extremidades, sendo intubada. durante a intubação, ela apresentou um episódio de hiperextensão dos membros superiores, rotação interna dos punhos e convulsão, devido aos exames que indicaram asfixia perinatal, o protocolo de hipotermia terapêutica foi iniciado, desligando-se o berço até que a paciente atingisse a temperatura ideal ($\frac{32^{\circ}}{circ}c - 35^{\circ}$), sendo monitorada a cada 20 minutos, e permanecendo assim por 74 horas, o bebê foi diagnosticado com sepse neonatal tardia na unidade de terapia intensiva neonatal e necessitou de seis dias de antibióticos. realizou-se ultrassom transfontanelar, que indicou redução dos sulcos e hiperecogenicidade difusa, após sete dias, ressonância magnética craniana (rmc) demonstrou sequela de hipóxico-isquêmico perinatal grave. a paciente permaneceu 12 dias na utin e 10 dias na enfermaria, recebendo alta com dieta por aleitamento materno e fórmula láctea. no exame neurológico na alta, a paciente apresentou hipotonia leve generalizada e reflexos primitivos presentes e simétricos (reflexo de busca, preensão palmar e plantar, e reflexos de moro completo e tônico-cervical presentes). atualmente, a criança tem idade cronológica de 3 anos e 3 meses, e avaliações conduzidas pela equipe de fisioterapia no ambulatório pediátrico demonstraram desenvolvimento motor dentro da faixa de normalidade para a idade.conclusãoos casos apresentados envolveram duas crianças com diagnóstico de encefalopatia hipóxico-isquêmica devido à asfixia perinatal que receberam um protocolo de hipotermia terapêutica por 74 horas, com monitoramento rigoroso da temperatura corporal. elas foram acompanhadas no ambulatório pela equipe multidisciplinar e, na avaliação do desenvolvimento motor, observou-se que ambas as pacientes tiveram desenvolvimento motor normal, os resultados obtidos são favoráveis ao uso do protocolo de hipotermia neonatal como intervenção neuroprotetora em bebês com asfixia perinatal, minimizando e prevenindo sequelas no desenvolvimento motor infantil.

Avaliação: o texto foi traduzido ao invés de somente corrigido, além de alguns comandos terem sido falhos, como o de regular as letras maiúsculas. Neste caso, devido à falha do prompt, diferenças entre a minha correção, e a feita pelo LLM não foram destacadas;

- Claude:

HIPOTERMIA NEONATAL E ANOXIA NEONATAL

Introdução

A hipotermia terapêutica é uma estratégia neuroprotetora que reduz a mortalidade e a incapacidade de recém-nascidos com encefalopatia hipóxico-isquêmica decorrente de asfixia perinatal. A terapia deve iniciar nas primeiras seis horas após o nascimento e consiste na redução da temperatura corporal dos neonatos (média de 33°C a 34°C) por 72 horas. A hipotermia reduz o metabolismo cerebral em aproximadamente 5% para cada 1°C de diminuição na temperatura corporal, o que retarda o início da despolarização celular anóxica.

Objetivo

O objetivo deste estudo foi relatar dois casos clínicos descrevendo os efeitos da hipotermia neonatal em bebês com asfixia perinatal e o desenvolvimento motor em programa de acompanhamento após alta hospitalar.

Métodos

Trata-se de relato de caso retrospectivo envolvendo duas crianças diagnosticadas com encefalopatia hipóxico-isquêmica devido à asfixia neonatal e submetidas ao protocolo de hipotermia na Unidade de Terapia Intensiva Neonatal. Dados referentes aos períodos pré-natal, perinatal e pós-natal foram coletados dos prontuários médicos das crianças. Posteriormente, foi realizada entrevista com o responsável utilizando roteiro semiestruturado de história materna, incluindo informações gerais sobre a mãe e o bebê. As crianças foram acompanhadas no ambulatório de alto risco e avaliadas por meio do Exame Neurológico de Hammersmith, avaliação do desenvolvimento motor pela Escala Motora Infantil de Alberta e teste de triagem Denver II. Os instrumentos foram aplicados conforme as recomendações dos manuais de avaliação e por avaliadores treinados. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da universidade.

Descrição do caso

Recém-nascida do sexo feminino, nascida de parto cesáreo com 37 semanas de idade gestacional, pesando 3.055g e medindo 46,5cm. A paciente apresentou escore de Apgar de 5 e 6 no primeiro e quinto minutos, respectivamente, necessitando de um ciclo de ventilação por pressão positiva. A lactente evoluiu com desconforto respiratório, sendo administrado oxigênio a 20% por uma hora, seguido de três horas de CPAP. Após quatro horas de vida, a paciente apresentou piora do desconforto respiratório e presença de cianose nas extremidades, sendo intubada. Durante a intubação, apresentou episódio de hiperextensão dos membros superiores, rotação interna dos punhos e convulsão. Devido aos exames que evidenciaram asfixia perinatal, o protocolo de hipotermia terapêutica foi iniciado, desligando o berço aquecido até que a paciente atingisse a temperatura ideal de 32°C a 35°C, sendo monitorada a cada 20 minutos e permanecendo por 74 horas. A bebê foi diagnosticada com sepse neonatal tardia na Unidade de Terapia Intensiva Neonatal e necessitou de seis dias de antibioticoterapia. Foi realizada ultrassonografia transfontanelar, indicando redução dos sulcos e hiperecogenicidade difusa. Após sete dias, a ressonância magnética craniana demonstrou sequela de evento hipóxico-isquêmico perinatal grave. A paciente permaneceu 12 dias na Unidade de Terapia Intensiva Neonatal e 10 dias na enfermaria, recebendo alta com dieta por aleitamento materno e fórmula láctea. No exame neurológico na alta, a paciente apresentou hipotonia leve generalizada e reflexos primitivos presentes e simétricos (reflexo de busca, preensão palmar e plantar, moro completo e reflexo tônico-cervical presentes). Atualmente, a criança tem idade cronológica de 3 anos e 3 meses, e as avaliações realizadas pela equipe de fisioterapia no ambulatório pediátrico demonstraram desenvolvimento motor dentro da normalidade para a idade.

Conclusão

Os casos apresentados envolveram duas crianças diagnosticadas com encefalopatia hipóxico-isquêmica devido à asfixia perinatal que receberam protocolo terapêutico de hipotermia por 74 horas com monitoramento rigoroso da temperatura corporal. Foram acompanhadas no ambulatório pela equipe multidisciplinar e, na avaliação do desenvolvimento motor, observou-se que ambas as pacientes apresentaram desenvolvimento motor normal. Os resultados obtidos são favoráveis ao uso do protocolo de hipotermia neonatal como intervenção neuroprotetora em bebês com asfixia perinatal, minimizando e prevenindo sequelas no desenvolvimento motor infantil.

Avaliação: novamente, o texto foi traduzido, então diferenças não foram destacadas, mas assim como o ChatGPT, o Claude manteve as letras maiúsculas em inícios de frases, mesmo com o prompt defeituoso, e no geral, os sentidos das frases se mantiveram.

Prompt 2:

Correct the text delimited by { and }, considering the following instructions:

The text must remain in formal language, with a direct tone, avoiding redundancies and language expressions. Sentences must be clear and not have double meaning. Typos must be corrected. Phrases should remain in the same verbal time, varying according to the context. Subject to verb agreement must be preserved. Punctuation mistakes, including comma mispositions, must be corrected. Upper-case letters should be used only for names, titles, and the beginning of sentences. Prepositions must be used according to the word they accompany. Quotation marks should be used only for quotations.

Example: I life in Braxil. My mother are a teacher to a local high School. She teached a lot kids. "I love mom." She's pretty. The girl of my class.

Correction: I live in Brazil. My mother is a teacher at a local high school. She teaches a lot of kids. I love my mom. I consider a girl in my class especially pretty.

Resultados:

- Claude:

NEONATAL HYPOTHERMIA AND NEONATAL ANOXIA

Introduction

Therapeutic hypothermia is a neuroprotective strategy that reduces mortality and disability in newborns with hypoxic-ischemic encephalopathy resulting from perinatal asphyxia. The therapy should start within the first six hours after birth and consists of reducing the body temperature of neonates to an average of 33°C to 34°C for 72 hours. Hypothermia reduces brain metabolism by approximately 5% for every 1°C decrease in body temperature, which delays the onset of cellular anoxic depolarization.

Objective

The goal of this study was to report two clinical cases describing the effects of neonatal hypothermia on motor development in babies with perinatal asphyxia followed in a program after hospital discharge.

Methods

This is a retrospective case report involving two children diagnosed with hypoxic-ischemic encephalopathy due to neonatal asphyxia who were submitted to a hypothermia protocol in the neonatal intensive care unit. Data regarding the prenatal, perinatal, and postnatal periods were collected from the children's medical records. Subsequently, an interview with the guardian was conducted using a semi-structured maternal history guide that included general information about the mother and baby. The children were followed up in the high-risk outpatient clinic and evaluated using the Hammersmith neurological examination, the Alberta infant motor scale for motor

development assessment, and the Denver II screening test. The instruments were administered according to the recommendations in the assessment manuals by trained evaluators. The study was approved by the university's research ethics committee.

Case description

Newborn female born by cesarean section at 37 weeks of gestational age, weighing 3,055g and measuring 46.5cm. The patient presented an Apgar score of 5 and 6 at the first and fifth minutes, respectively, requiring a cycle of positive pressure ventilation. The infant developed respiratory distress; thus, 20% oxygen was delivered for one hour, followed by three hours of CPAP. After four hours of life, the patient presented worsening respiratory distress and cyanosis in the extremities and was intubated. During intubation, she presented an episode of hyperextension of the upper limbs, internal rotation of the wrists, and seizure. Due to test results that showed perinatal asphyxia, the therapeutic hypothermia protocol was started by turning off the crib warmer until the patient reached the ideal temperature of 32°C to 35°C. The patient was monitored every 20 minutes and remained at this temperature for 74 hours. The baby was diagnosed with late neonatal sepsis in the neonatal intensive care unit and required six days of antibiotic therapy. Transfontanellar ultrasound was performed, indicating reduction of the sulci and diffuse hyperechogenicity. After seven days, cranial magnetic resonance demonstrated sequelae of a severe perinatal hypoxic-ischemic event. The patient remained 12 days in the neonatal intensive care unit and 10 days in the ward before being discharged with a diet of breast milk and formula. In the neurological examination at discharge, the patient presented mild generalized hypotonia and symmetrical primitive reflexes (rooting reflex, palmar and plantar grasp, complete Moro reflex, and tonic-cervical reflex). Currently, the child has a chronological age of 3 years and 3 months, and evaluations conducted by the physiotherapy team at the pediatric outpatient clinic demonstrated motor development within the normal range for age.

Conclusion

The cases presented involved two children diagnosed with hypoxic-ischemic encephalopathy due to perinatal asphyxia who received a therapeutic hypothermia protocol for 74 hours with strict monitoring of body temperature. They were followed up at the outpatient clinic by the multidisciplinary team, and assessment of motor development showed that both patients had normal motor development. The results obtained support the use of the neonatal hypothermia protocol as a neuroprotective intervention in babies with perinatal asphyxia to minimize and prevent sequelae in motor development.

Avaliação: o prompt não teve um resultado efetivo. Diversos erros de gramática puderam ser notados, principalmente com relação à pontuação. O prompt será corrigido novamente.

Prompt 3: (gerado pelo ChatGPT tendo como base os prompts anteriores)

When correcting the text delimited by { and }, apply the following rules:

1. Language and Tone

- Maintain a **formal academic tone**.
- Ensure the text is **direct**, **objective**, and **professional**.

- Avoid colloquialisms, idioms, or informal expressions.
- o Eliminate redundancies and wordiness.

2. Clarity and Meaning

- Sentences must be unambiguous.
- Avoid constructions that allow **double interpretation**.
- Prefer precise vocabulary over vague or figurative language.

3. Spelling and Typographical Accuracy

• Correct all spelling errors, typos, and formatting inconsistencies.

4. Verb Tense and Agreement

- Maintain the **same verb tense** throughout each section, adjusting only when contextually required.
- Ensure **subject-verb agreement** and **noun-adjective agreement** are correct.

5. Punctuation

- Correct punctuation errors and comma misplacements.
- Use commas for **enumerations** and **to separate adverbial or displaced clauses** when appropriate.
- Add commas when they are necessary, but avoid overuse.

6. Capitalization

- Use **uppercase letters** only for:
 - Proper nouns (names, institutions, places).
 - Titles and abbreviations.
 - The first word of a sentence.
- Avoid unnecessary capitalization of common nouns.

7. Prepositions

- Ensure **phrasal verbs** (e.g., *followed by*, *based on*, *resulting from*, *associated with*) are used **with the correct preposition or particle**.
- Replace incorrect combinations with their **grammatically and semantically correct equivalents**.
- When possible, prefer **single-word verbs** (e.g., *examined* instead of *looked into*) to maintain academic formality.

8. Quotation Marks

- Use quotation marks only for direct quotations from a source.
- Remove or replace unnecessary quotation marks used for emphasis or titles.

9. Consistency

- Maintain consistent **style**, **terminology**, and **formatting** across the entire text.
- Ensure coherent flow between sentences and paragraphs.

10. Output Expectation

• Return the corrected text only, with no additional explanations unless explicitly requested.

Resultados:

Os resultados foram extremamente similares aos conseguidos a partir do prompt 2, então não foram incluídos:

Prompt 4:

When correcting the text delimited by { and }, apply the following:

1. Academic Tone

Maintain a formal, objective, and concise academic tone.

Avoid colloquial language, idioms, and emotional or subjective expressions.

2. Clarity and Precision

Ensure sentences are clear, logical, and unambiguous.

Replace vague or informal terms with precise academic equivalents.

Use active voice where it improves clarity; keep passive voice where standard.

3. Grammar and Syntax

Correct all grammatical errors, including tense, agreement, and article usage.

Correct typos and spelling mistakes.

Avoid repeating the same word twice in a sentence.

Use past tense for case descriptions and present tense for general facts.

Keep parallel structure in lists and consistent terminology throughout.

4. Punctuation and Structure

Use commas, colons, and semicolons correctly.

Avoid run-on sentences, fragments, and unnecessary punctuation.

5. Capitalization and Formatting

Capitalize only proper nouns, section titles, and standard abbreviations (e.g., MRI, NICU).

Keep generic terms lowercase. Maintain section titles in bold.

6. Spelling and Units

Follow U.S. English spelling.

Use standard SI units and consistent formatting: "33°C," "3,055 g," "46.5 cm." Space between number and unit, except for °C.

7. Articles and Determiners

Use "the" for specific nouns, "a/an" for general ones.

Omit unnecessary articles before plural or uncountable nouns.

8. Prepositions and Phrasal Verbs

Ensure correct combinations:

- o "associated with," not "associated to."
- o "resulted from," not "resulted by."

• "followed at the clinic," not "followed in."

Prefer formal verbs over informal phrasal ones.

9. Numbers and Data

Spell out one—nine (unless with units or data). Keep measurement and numerical style consistent.

10. Flow and Cohesion

Maintain consistent terminology and smooth transitions ("thus," "subsequently," "therefore").

Avoid redundancy and ensure logical section flow.

11. Output

Return only the corrected text, preserving structure, section headings, and formatting. Do not add explanations or comments.