Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Esben Thyssen Vestergaard

Title of dissertation: Fracture rates and response to zoledronate in children with cerebral palsy

Date for defence: June 6 at (time of day): 2pm Place: Aarhus Universitet, Lille Anatomisk Auditorium (bygn. 1231- lok. 424)

Press release (Danish)

Hyppigheden af knoglebrud og effekten af zoledronat hos børn med spastisk lammelse

Et nyt ph.d.-projekt fra Aarhus Universitet, Health, undersøger forekomsten af knoglebrud og afprøver effekten af zoledronat på knogletætheden hos børn med spastisk lammelse i Danmark. Projektet er gennemført af Jakob Bie Granild-Jensen, der forsvarer det d. 6/6 2023.

Når et knoglebrud pludselig opstår, har det stor betydning for et barn med spastisk lammelse og dets familie. Endvidere kan det være blot det første tegn på et skelet, som langsomt mister styrke. Denne ph.d. blev født ud af frustrationen hos familier og læger som oplevede knoglebrud hos børn med spastisk lammelse.

Forekomsten af knoglebrud har stor betydning for planlægning og forebyggelse. Nogle studier angiver, at knoglebrud hos børn med spastisk lammelse er dobbelt så hyppige som hos børn uden spastisk lammelse, selvom disse børn med spastisk lammelse har begrænsede muligheder for fysisk leg og sport. Projektet undersøgte forekomsten af knoglebrud i Danmark ved at kigge på alle danske børn, som blev født i årene 1997-2007. Ud fra 787.159 børn uden spastisk lammelse og 1.451 børn med spastisk lammelse fastlagdes, at hyppigheden af knoglebrud ikke er højere hos børn med spastisk lammelse. Til gengæld sidder knoglebruddene meget oftere i benene, hvilket betyder, at de kan være udtryk for sekundær knogleskørhed. Således er det en mulighed at forebygge dem.

Projektet inkluderede et litteraturstudie, som kortlagde hvad man ved om behandling af sekundær knogleskørhed med bisfosfonater hos børn. Bisfosfonater bruges rutinemæssigt mod knogleskørhed hos voksne. Projektet konkluderede, at effekten af orale bisfosfonateter var mindre end infunderede bisfosfonater. Pamidronat, som gives ved infusioner over 3 dage hver 3. måned, var dokumenteret i små studier af børn med spastisk lammelse og også undersøgt hos børn med en række andre årsager til sekundær knogleskørhed. Et nyere bisfosfonat, zoledronat, kan gives ved en infusion på 30 minutter hver 6. måned og har i teorien også en kraftigere effekt. Men dette nye bisfosfonat zoledronat var dårligt belyst, både til behandling af børn med spastisk lammelse og til børn med andre tilstande.

Effekten af zoledronat blev derfor undersøgt i et klinisk, dobbeltblindet lodtrækningsforsøg som led i ph.d.-projektet. 24 børn med svær spastisk lammelse blev behandlet med zoledronat eller placebo i 12 måneder. Efter behandlingen var knogletætheden steget signifikant hos børnene i zoledronatgruppen i både lårbenet og i ryggen.

Projektets resultater bringer videnskaben et skridt fremad og kan danne baggrund for en bedre behandling af knogleskørhed hos børn med spastisk lammelse.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 6/6 kl. 14 i Lille Anatomisk auditorium, Aarhus Universitet (bygn. 1231- lok. 424).

Titlen på projektet er ”Fracture rates and response to zoledronate in children with cerebral palsy”.
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Press release (English)

Fracture rates and response to zoledronate in children with cerebral palsy

This new ph.d.-project from Aarhus University investigates the fracture rates and trials the effect of zoledronate on bone density in children with cerebral palsy . The project was carried out by Jakob Bie Granild-Jensen, who is defending his dissertation on Tuesday 6th of June at 2pm.

When a fracture suddenly occurs, it has a significant implications for a child with cerebral palsy and its family. Furthermore, it may be just the first sign of a skeleton slowly losing strength. This ph.d. arose from the frustration experienced by families and doctors challenged by fractures occurring in children with cerebral palsy.

The frequency of bone fractures has great importance for planning and prevention. Some studies indicate that bone fractures in children with cerebral palsy are twice as common as in children without cerebral palsy, even though children with cerebral palsy have limited possibilities for participation in physical play and sports. The project examined the incidence of bone fractures in Denmark by looking at all Danish children born between 1997 and 2007. Based on 787,159 children without cerebral palsy and 1,451 children with cerebral palsy, it was determined that the frequency of bone fractures is not higher in children with cerebral palsy. However, the fractures occur much more frequently in the legs, which means they may be indicative of secondary osteoporosis. Thus, they may be preventable.

The project included a literature review that mapped what is known about the treatment of secondary osteoporosis with bisphosphonates in children. Bisphosphonates are widely used against osteoporosis in adults. The project concluded that the effectiveness of the bisphosphonate pamidronate, infused over three days every three months, had been documented in a small group of children with cerebral palsy and in children with various other causes of secondary osteoporosis. A newer bisphosphonate, zoledronate, is infused over 30 minutes every six months and theoretically has a stronger effect. However, this new bisphosphonate, zoledronate, was poorly studied both for the treatment of children with cerebral palsy and for children with other conditions.

Therefore, the effect of zoledronate was examined in a randomized, controlled, double blind trial as part of the PhD project. 24 children with severe cerebral palsy were treated with zoledronate or placebo for 12 months. After the treatment, bone density had significantly increased in both the femur and the spine in the zoledronate group compared to the placebo group.

The results of the ph.d.-project advance the current knowledge and provide a step towards better treatment of osteoporosis in children with cerebral palsy.

The defence is public and takes place on June 6 at 2pm in Lille Anatomisk auditorium, Aarhus Universitet (building 1231- room 424). The title of the project is "Fracture rates and response to zoledronate in children with cerebral palsy". For more information, please contact PhD student Jakob Bie Granild-Jensen, email: jakobgranild@dadlnet.dk.

Assessment committee:
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