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Stickler syndrome

Stiff Man Syndrome

orphanaesthesia

a project of the German Society
of Anaesthesiology and Intensive Care Medicine

SUPPLEMENT NR. 13 | 2018

OrphanAnesthesia –
ein krankheitsübergreifendes Projekt des Wissenschaftlichen Arbeitskreises Kinderanästhesie der Deutschen Gesellschaft für Anästhesiologie und Intensivmedizin e.V.

Ziel des Projektes ist die Veröffentlichung von Handlungsempfehlungen zur anästhesiologischen Betreuung von Patienten mit seltenen Erkrankungen. Damit will Orphan Anesthesia einen wichtigen Beitrag zur Erhöhung der Patientensicherheit leisten.

Patienten mit seltenen Erkrankungen benötigen für verschiedene diagnostische oder therapeutische Prozeduren eine anästhesiologische Betreuung, die mit einem erhöhten Risiko für anästhesieassoziierte Komplikationen einhergehen. Weil diese Erkrankungen selten auftreten, können Anästhesisten damit keine Erfahrungen gesammelt haben, so dass für die Planung der Narkose die Einholung weiterer Information unerlässlich ist. Durch vorhandene spezifische Informationen kann die Inzidenz von mit der Narkose assoziierten Komplikationen gesenkt werden. Zur Verfügung stehendes Wissen schafft Sicherheit im Prozess der Patientenversorgung.

Die Handlungsempfehlungen von OrphanAnesthesia sind standardisiert und durchlaufen nach ihrer Erstellung einen Peer-Review-Prozess, an dem ein Anästhesist sowie ein weiterer Krankheitsexperte (z.B. Pädiater oder Neurologe) beteiligt sind. Das Projekt ist international ausgerichtet, so dass die Handlungsempfehlungen grundsätzlich in englischer Sprache veröffentlicht werden.

Ab Heft 5/2014 werden im monatlichen Rhythmus je zwei Handlungsempfehlungen als Supplement der A&I unter www.ai-online.info veröffentlicht. Als Bestandteil der A&I sind die Handlungsempfehlungen damit auch zitierfähig. Sonderdrucke können gegen Entgelt bestellt werden.

Bisher in A&I publizierte Handlungsempfehlungen finden Sie unter:

www.ai-online.info/Orphsuppl
www.orphananesthesia.eu

OrphanAnesthesia –
a common project of the Scientific Working Group of Paediatric Anaesthesia of the German Society of Anaesthesiology and Intensive Care Medicine

The target of OrphanAnesthesia is the publication of anaesthesia recommendations for patients suffering from rare diseases in order to improve patients' safety. When it comes to the management of patients with rare diseases, there are only sparse evidence-based facts and even far less knowledge in the anaesthetic outcome. OrphanAnesthesia would like to merge this knowledge based on scientific publications and proven experience of specialists making it available for physicians worldwide free of charge.

All OrphanAnesthesia recommendations are standardized and need to pass a peer review process. They are being reviewed by at least one anaesthesiologist and another disease expert (e.g. paediatrician or neurologist) involved in the treatment of this group of patients.

The project OrphanAnesthesia is internationally oriented. Thus all recommendations will be published in English.

Starting with issue 5/2014, we'll publish the OrphanAnesthesia recommenations as a monthly supplement of A&I (Anästhesiologie & Intensivmedizin). Thus they can be accessed and downloaded via www.ai-online.info. As being part of the journal, the recommendations will be quotable. Reprints can be ordered for payment.

A survey of until now in A&I published guidelines can be found on:

www.ai-online.info/Orphsuppl
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orphanästhesia

Anaesthesia recommendations for patients suffering from

Stickler syndrome

Disease name: Stickler syndrome

ICD 10: Q87.5

Synonyms: Marshall-Stickler, Wagner-Stickler hereditary arthro-ophthalmopathy

First characterised by Stickler in 1965, Stickler syndrome is a progressive hereditary arthro-ophthalmopathy. It is thought to have a prevalence of 1 in 7,500-10,000, making it the commonest heritable disorder of connective tissues.

Medicine in progress

Perhaps new knowledge

Every patient is unique

Perhaps the diagnostic is wrong

Find more information on the disease, its centres of reference and patient organisations on Orphanet: www.orpha.net

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Disease summary

It can affect several different systems and can present to various specialities at many chronological stages:

1. Airway and orofacial structures
    a. characteristic face (malar hypoplasia, flat nasal bridge, micro/ retrognathia)
    b. acute upper airway obstruction
    c. simple posterior cleft palate
    d. manifests as part of Pierre Robin Sequence (PRS).
2. Auditory
    a. hearing loss, predominantly sensorineural but also conductive or mixed.
3. Ophthalmic
    a. high refractive error (myopia)
    b. cataracts
    c. vitreous abnormalities
    d. progressive choroidoretinopathy with exudative and rhegmatogenous detachment leading potentially to blindness.
4. Skeletal
    a. Spine: scoliosis, endplate changes, Schmorl nodes, platyspondyly, Scheuermann-like kyphosis, ossification of anterior longitudinal ligament, Forestier disease, bamboo spine. High incidence (85%) of 85% chronic back pain
    b. Femoral: protrusio acetabuli, coxa valga, femoral head failure or slipped upper femoral epiphyses (SUFE) and hip osteoarthritis (OA), usually in the third and fourth decade
    c. Other: patellar instability

It is divided into several subtypes. Types 1-3 are inherited in an autosomal dominant pattern, the other types are autosomal recessive. Across the subtypes within different families various genetic loci have been described.

- Type 1 (COL2A1)
- Type 2 (COL11A1)
- Type 3 (COL11A2) non-ocular
- Other (COL9A1/COL9A2/COL9A3/LOXL3)

The phenotypic spectrum is wide, and patients can present prenatally through to later in life and the age at clinical manifestation is very variable.

Phenotypic variability, multi-system involvement and the wide age range at presentation make diagnosis challenging and often delayed. There is also a significant clinical overlap with other syndromes that have auditory, ophthalmic and joint involvement. Patients may be seen by multiple healthcare professionals before a diagnosis is made. Diagnostic criteria for patients with type 1 Stickler syndrome are available although they are primarily used in research settings.

Several studies have demonstrated this diagnostic challenge, including retrospective studies looking for Stickler patients presenting to ophthalmology departments. 11-51% of the patients presenting to cleft palate teams with Pierre-Robin sequence, (micrognathia, retroglossia +/- cleft palate) will ultimately be diagnosed with Stickler syndrome.

Early diagnosis is important in terms of instituting preventative eye treatment and giving genetic counselling to the family. A high index of suspicion is important for patients with constellations of audiological, ophthalmic, orthopedic and airway problems.

Rare associations/ presentations:

- One fatality associated with the migration of an indwelling infra-orbital catheter presumed secondary to collagenopathy.
- Mitral valve disease: two conflicting studies outlined later and two case reports
- Hypertrophic cardiomyopathy
- Brown-Séquard syndrome with cervical spondylosis and myelopathy
- Cervical spine dysmorphism
- Peripheral neuropathy
- Immunoglobulin deficiency
- von Willebrand's disease
- Giant cell granuloma
- Stapes ankyloses

Typical surgery

Stickler syndrome patients can present to a variety of clinicians for elective and emergency procedures.

Neonatal: difficult airway management at birth should be foreseen

Airway: acute upper airway obstruction may require mandibular advancement surgery such as mandible distraction osteogenesis, tongue-lip adhesion or glossopexy, tracheostomy

Plastics: cleft palate may require surgery, with possible revisions of naso-oral fistulae or velopalatine insufficiency.

Ocular: prophylactic laser/ cryo therapy may be needed for the prevention of retinal detachment or giant retinal tears. The treatment of retinal detachment/ tears contemplates vitrectomy, scleral buckling procedures, cataract surgery. According to one case report, patients may develop hyphema

Audiological: investigation of hearing loss is recommended at 6-12 month intervals and may require auditory brainstem reflex testing. Management of hearing loss may require transtympanic drains, bone anchored hearing aids, cochlear implants and occasionally stapedectomy for stapes ankylosis.

Orthopedic: commonly, hip procedures for the treatment of early femoral head failure (SUFE, femoral head necrosis, hip osteoarthritis leading to hip arthroplasty) are needed; less commonly patients are seen for knee evaluation due to patella instability and arthropathy and joint replacement surgery

Spinal: scoliosis management may be required.

Type of anaesthesia

Published data on the types of anaesthesia provided is limited. Airway, cleft palate and significant spinal surgery necessitates general anaesthesia. Despite the spinal anomalies, neuraxial/ regional anaesthesia can be considered on a case by case basis for lower limb procedures.

Necessary additional diagnostic procedures (preoperative)

Various papers have looked at plain radiographs and CT imaging for craniofacial measurements to predict the outcome of airway manipulation surgery. There is no evidence to suggest that this aided the prediction of the difficulty of airway management.

The incidence of mitral valve prolapse was thought to be significantly higher in patients with Stickler syndrome secondary to a study and case reports showing rapidly progressive mitral valve regurgitation. Subsequent larger studies have refuted this, saying the incidence of mitral valve and other valve disease in Stickler syndrome was not higher than in the general population, thus impacting on the operative work-up and use of prophylactic antibiotics in Stickler syndrome.

Each patient should have a full history and examination and, if indicated, further cardiac investigations (ECG, ECHO as required).

There are very rare associations with the Stickler syndrome as detailed above that may merit further investigation should history and examination warrant it.

Particular preparation for airway management

In Stickler syndrome, difficulties with facemask ventilation, oxygenation and intubation can be expected.

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The published data on general anaesthesia lean towards a volatile or slow intravenous induction technique maintaining spontaneous breathing.

Airway management needs mirror the wide variability of Stickler syndrome phenotypes. Location, personnel and equipment are required to anticipate difficult facemask ventilation. Difficult intubation requires planning.

Location: theatre complex, delivery suite

Personnel: senior anesthetist, ENT surgical team, neonatal teams

Equipment: direct and indirect video laryngoscopes and suitable airway adjuncts, progressing to fibre-optic intubation and ultimately surgical airway or wake up dependent on the clinical situation

Particular preparation for transfusion or administration of blood products

Concurrent von Willebrand's disease has been reported. Management should involve haematology colleagues. There is no other particular preparation for anticoagulation specific to Stickler syndrome.

Particular preparation for anticoagulation

Not reported.

Particular precautions for positioning, transport or mobilisation

Patients with Stickler syndrome can initially have hypermobile joints with a progressive arthropathy. Therefore, particular attention should be given to joint support and positioning to prevent iatrogenic injury.

Probable interaction between anesthetic agents and patient's long-term medication

No long-term medications are particular to Stickler syndrome.

Anaesthesiologic procedure

Anticipation of and preparation for a difficult airway.

Particular or additional monitoring

No particular monitoring required for Stickler syndrome.

Possible complications

For the anesthetist, the main issues surround managing the difficult airway for both elective and emergency procedures.

Postoperative care

In the neonatal and infant period, post-operative airway obstruction has been documented. This has been seen particularly in patients with acute airway obstruction and occasionally cleft palate. This has necessitated the use of prone positioning techniques, naso-pharyngeal prongs, continuous positive airway pressure (CPAP) and ultimately tracheostomy.

Information about emergency-like situations/ Differential diagnostics

caused by the illness to give a tool to distinguish between a side effect of the anesthetic procedure and a manifestation of the disease

Common emergency procedures include upper airway obstruction management and interventions such as prone positioning, naso-pharyngeal airway, CPAP, tracheostomy. In addition, retinal detachment may be an emergency and its surgical interventions must be promptly performed.

Ambulatory Anaesthesia

Published data regarding ambulatory anaesthesia for Stickler syndrome are limited.

In the younger age groups, concerns exist regarding the use of opiate analgesia when airway obstruction is a feature.

There is one case report of a fatality of an adult patient at home having local anesthetic injected into an indwelling orbital catheter that had migrated centrally.

Obstetrical anaesthesia

Published data/ experience on the management of patients with Stickler syndrome in pregnancy or labour do not exist. If difficult airway management is anticipated to be compounded by the potential difficulties of pregnancy, then avoiding general anaesthesia is advisable. Advanced planning of regional intervention is advisable. There are spinal considerations of note potentially complicating but not necessarily contra-indicating neuroaxial techniques. A plan should be made depending on maternal choice and global anesthetic assessment.

Pharmacological considerations

No published data on pharmacological interactions exist.

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Please note that this guideline has not been reviewed by an anesthesiologist but by two disease experts instead.

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Date / Signature

Please contact me for further information ○

I would like to participate in the project ○

ADDRESS

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