the Child Dental Patient with

Epidermolysis Bullosa

François Clauss, Marie-Cécile Manière, Arina Vinereanu

Les Hôpitaux Universitaires de STRASBOURG

ORares MALADIES RARES ORALES ET DENTAIRES STRASBOURG CRMR COORDINATEUR

ASOCIAȚIA NAȚIONALĂ DE STOMATOLOGIE PEDIATRICĂ A.N.S.P.R. DIN ROMÂNIA

Epidermolysis bullosa (EB): definition, nosology, numbers

Definition

Group of genodermatoses defined by mechanical fragility of epithelial lined or surfaced tissues, most notably the skin.

Characteristic feature: recurrent blistering or erosions of skin and mucosa as a result of even minor traction to these tissues.

Cause: Genetic mutations of structural proteins of the basal membrane ("anchoring proteins")

Fine, JD. Inherited epidermolysis bullosa. *Orphanet J Rare Dis* **5,** 12 (2010). https://doi.org/10.1186/1750-1172-5-12

- High fragility of skin → "BUTTERFLY" disease

- Usual everyday activities (e.g. dressing, eating, bathing etc) are dramatically impacted by this severe condition; al physical interactions become potentially harmful for skin and mucosa, which can blister and tear.

- Can be life-threatening: 4 out of 10 affected persons do not even reach adolescence.

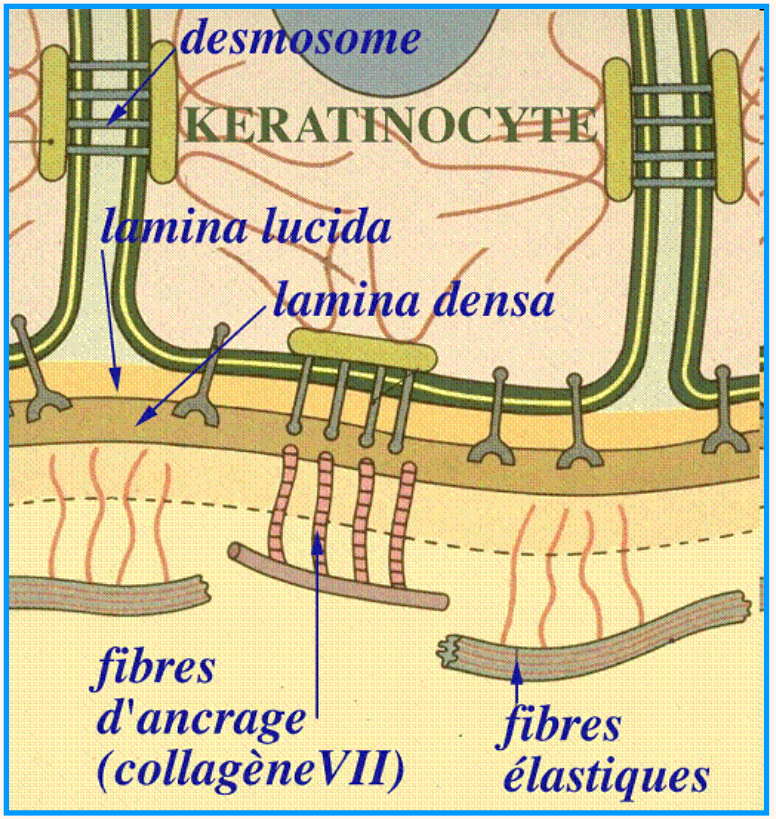
- **Prevalence:** 5.6 - 9.9 / 1 000 000 inhabitants
  Incidence: 17.9 – 19.6 / 1 000 000 live births

- ***DEBRA*** (*) estimates about ½ million people affected in the world.

(*) National UK charity that supports individuals and families affected by EB
https://www.debra.org.uk/

EB - classification:

- Epidermolytic /simple **EBS** (cleavage in the epidermis)
- Junctional **JEB** (separation of *Lamina lucida*)
- Dystrophic (dermolytic) **DEB** (separation below *Lamina densa*)
- Kindler syndrome (**KS**/Mixt EB) (cleavage at any level)



Dermo-epidermal junction

Orphanet : ORPHA 303
French Society of Dermatology
Association EBAE Epidermolyse Bulleuse

ebae

EBS

(12 subtypes)

- Episodes of oral ulcerations 2-3 times/month

- Heal without scaring

- Clinical examination: ulcers (34-58%)

- More often during perinatal period

Dental management

- Careful
- No specific measures

EBS **JEB** DEB KS

(7 subtypes)

- Granulation tissue
- Extensive lesions – slow healing; fingers, perioral, perianal
- Severe infections - sepsis

- Limited mouth opening → **Do not force**
- Intraoral soft tissue involvement – less frequent
  Rarely scarring
  Slow healing → **Careful handling**
- AMELOGENESIS IMPERFECTA (100%)

- tooth sensitivity
- attrition

DEB

(13 subtypes)

- Mitten hands diformities
- Squamous cell carcinoma
- Alopecia
- Esophageal strictures
- Dystrophic nails

- Limited mouth opening
  - microstomia

24 mm → 22mm → 20mm

0-6y 7-12y >13y

- Absence of tongue papillae
  - clinical dg
- Ankyloglossia
- Infected ulcers and bullae

KS

less frequent

- Fragile mucosa
- Microstomia (+/-)
- Periodontitis

  (high prevalence, early onset, fast progression)

- Risc Squamous Cell Carcinoma

Guidelines for dentists treating DEB patients

- Dental treatments can be done under LA, CS or GA

  - GA – specific protocol, trained nurses

  - GA, CS – hospital premises

- Do not try to lift patients

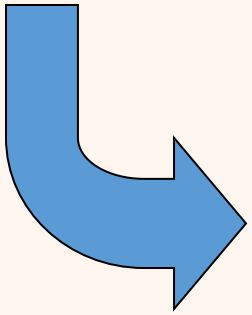
- Gentle ultrasonic scaling

- LA – deep infiltration

- Prescriptions – oral suspension, soluble tablets

Guidelines for dentists treating DEB patients

- Be careful, but not afraid of mucosal detachment



Wet cotton rolls before removal

Lubricate lips and mucosa

Avoid power suction

Gentle pressure

- Expect and look for SCC from the 2nd decade (or earlier)
- Close preventive follow-up (1-3 m)

Guidelines for dentists treating DEB patients

- **Treatment of enamel hypoplasia associated to DEB :**

  Use of composite or glass - ionomer restorations

  Stainless-steel crowns are recommended

  local or general anesthesia

- **Oral surgery**

  Benefice-risk assessment

  Dental extractions under antibioprophylaxis

  Difficulties linked to surgical access and microstomia

  Prophylactic dental extractions have been described

  (posterior teeth) → avoid complications in areas that become

  impossible to reach with time due to microstomia

Guidelines for dentists treating DEB patients

- **Orthodontic treatment**

  Benefice-risk assessment, risks of iatrogenic soft tissue trauma

  High prevalence of dental malposition and crowding linked to jaw bones growth alterations

  Indication of dental extractions in case of severe dental crowding

- **Implants and prosthodontic treatments**

  Implants have been described in moderate forms of EB

  Major difficulties linked to microstomia

Conclusions

- Importance of a multi-disciplinary management
- Multiple risks linked to this severe medical condition
- Importance of regular follow-up and dental disease prevention due to the increased individual carious risk (cariogenic diet + oral hygiene difficulties)

Is there hope for EB children?

Science is optimistic (*):

“Autologous transgenic keratinocyte cultures regenerated an entire, fully functional epidermis on a seven-year-old child suffering from a devastating, life-threatening form of JEB. The proviral integration pattern was maintained *in vivo* and epidermal renewal did not cause any clonal selection. Clonal tracing showed that the human epidermis is sustained not by equipotent progenitors, but by a limited number of long-lived stem cells, detected as holoclones, that can extensively self-renew *in vitro* and *in vivo* and produce progenitors that replenish terminally differentiated keratinocytes. “

(*)Source: Hirsch, T., Rothoeft, T., Teig, N. *et al.* Regeneration of the entire human epidermis using transgenic stem cells. *Nature* **551,** 327–332 (2017). https://doi.org/10.1038/nature24487