The registry for Epidermolysis bullosa (EB) in the EB House Austria: simple and effective

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Introduction

Epidermolysis bullosa (EB) is a rare genetic skin disease, affecting approximately 30.000 patients in the EU (Ref. 1). The absence or alteration of proteins results in reduced adhesiveness of various skin layers. Minimal mechanical trauma causes blisters, wounds and scars, leading to numerous complications (Fig. 1).

Rare diseases like EB are commonly characterised by a paucity of comprehensive standardised clinical data. Thus, integrative, broadly accessible and interoperable registries are particularly essential to optimise management in diagnostic, investigative and therapeutic terms. Moreover, registries are key instruments to determine natural history as well as to recruit patients for clinical trials (gene therapy, protein therapy, cell therapy, small molecules).

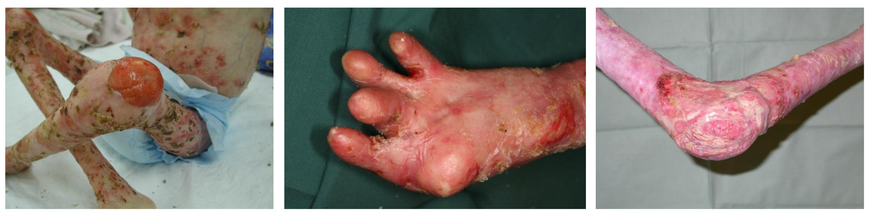

Fig. 1 Clinical pictures of EB complications:
left: wounds and scars, middle: fusion of fingers, right: aggressive skin cancer

Methods

We defined a minimum data set for an EB registry, based on examples of other rare disease registries (Fig. 2). The data are kept according to data protection criteria.

MINIMUM DATA SET EB House Austria

- Patient ID
- Patient consent
- Current clinical study participation
- Treatment centre
- Physician in charge
- **Diagnosis according to Fine J-D et al. (Ref. 2)**

  Diagnostic methods:
  - Immunofluorescence mapping
  - Electron microscopy
  - Mutation analysis

Fig. 2a Minimum data set of the Austrian EB registry

Data behind patient ID

- First name
- Family name
- Gender
- Date of birth
- Patient contact data
- Country of residence

Fig. 2b Data behind Patient ID in the minimum data set of the Austrian EB registry

Results

The Austrian EB registry currently comprises 495 patients. Core of the registry are the 156 genetically characterised EB patients (Fig. 3). Based on a long-term experience at the EB House Austria as an interdisciplinary unit for diagnosis, medical care, academic affairs and research related to EB, we reduced the information within our EB registry to the essential data with simultaneous consideration that medical and private patient data are kept strictly confidential.

Major EB subtype	Subtype concrete	Number of patients
EBS Basal		
	EBS-loc	17
	EBS-gen sev	9
	EBS-gen intermed	6
	EBS-MD	3
	EBS-PA	1
	EBS-Og	1
JEB, generalized		
	JEB	7
	JEB-gen sev	4
	JEB-gen intermed (De Luca 2006 & 2014, Ref. 3 & 4 → Murauer 2015, Ref. 5)	20
	JEB-PA	1
JEB, localized		
	JEB-loc	2
DDEB		
	DDEB-gen	6
	DDEB-o	1
	DDEB-pt	9
	DDEB-pr	3
RDEB		
	RDEB	7
	RDEB-gen sev	40
	RDEB-gen intermed	14
	RDEB-loc	1
	RDEB-BDN+DDEB-na	1
Kindler	KS	3
Total		**156**

Fig. 3 Core data of the EB registry Austria; green: ongoing clinical trials

Conclusion

- The relevance of interoperable disease registries is reflected by their designation as core components of Centres of Expertise (CE) and European Reference Networks (ERN) by the European Union (EU)
- Although detailed formal requirements remain to be contracted, efficacy and feasibility of administration are key demands for acceptance and success
- The EB registry data allow to better correlate complex genotype/phenotype relationships, to determine epidemiological and prognostic markers, to identify and comprehensively characterise disease causing genes as well as pathogenic mutations and molecular pathways (e.g. natural history, classification)
- In the next step, registries at disposal of the international research community allow efficient recruitment of probands, especially those with index features who thereby meet specific inclusion criteria for distinct clinical trials (e.g. Diacerein for EBS-gen sev) and therapeutic research (e.g. *ex vivo* gene therapy in JEB-gen intermed) (Fig. 3 – Fig. 4). Participants for clinical trials can only be recruited via the physician in charge
- **One of the key strategies to meet security of medical data is to provide case numbers and diagnoses, but no private patient information**

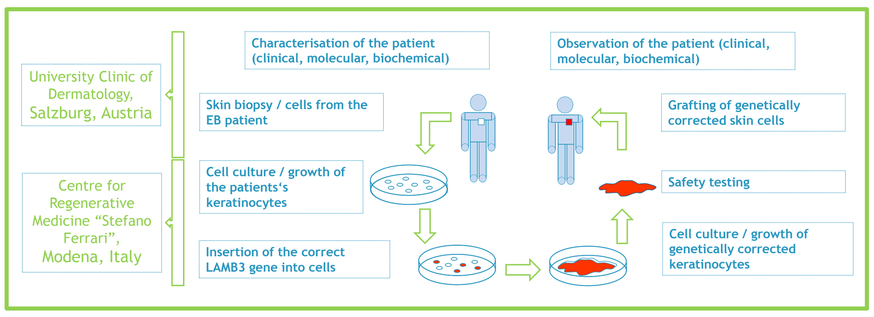

Fig. 4 Gene therapy scheme

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