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ORIGINAL ARTICLE

Comparability of input parameters in the German Retina.net ROP registry and the EU-ROP registry – An exemplary comparison between 2011 and 2021

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Abstract

Purpose: The German Retina.net ROP registry and its Europe-wide successor, the EU-ROP registry, collect data from patients treated for ROP. This analysis compares input parameters of these two registries to establish a procedure for joint analyses of different registry data using exemplary datasets from the two registries.

Methods: Exemplary datasets from the two databases over a 1-year period each (German Retina.net ROP Registry, 2011, 22 infants; EU-ROP Registry, 2021, 44 infants) were compared. The parameters documented in the two databases were aligned and analysed regarding demographic parameters, treatment modalities, complications within first 24 h and retreatments.

Results: The current analysis showed that data can be aligned for joint analyses with some adjustments within the data structure. The registry with more detailed data collection (EU-ROP) needs to be reduced regarding granularity in order to align the different registries, as the registry with lower granularity determines the level of analyses that can be performed in a comparative

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approach. In the exemplary datasets, we observed that the overall most common ROP severity in both registries was zone II, 3+ (2011: 70.5%; 2021: 65%), with decreasing numbers of clock hours showing preretinal neovascularisations (2011: 10–12 clock hours in 29% of cases, 2021: 4–6 clock hours in 38%). The most prevalent treatment method was laser coagulation in 2011 (75%) and anti-VEGF therapy in 2021 (86.1%). Within the anti-VEGF group, all patients were treated with bevacizumab in 2011 and with ranibizumab in 2021. Retreatment rates were comparable in 2011 and 2021.

Conclusion: Data from two different ROP registries can be aligned and jointly analysed. The analysis reveals a paradigm shift in treatment modalities, from predominantly laser to anti-VEGF, and within the anti-VEGF group from bevacizumab to ranibizumab in Germany. In addition, there was a trend towards earlier treatment in 2021.

KEYWORDS
anti-VEGF, laser coagulation, observational study, registry, retinopathy of prematurity, ROP

1 | INTRODUCTION

Retinopathy of prematurity (ROP) is a leading cause of visual impairment and childhood blindness worldwide, and also in industrialized countries (Solebo et al., 2022), with far-reaching consequences for the future lives of affected children and their families. A rise in the overall incidence of any type of ROP was reported in Sweden between 2008 and 2015, while no significant increase in the number of ROP cases requiring treatment was observed during the same period (Holmström et al., 2018). A major contributing factor of rising overall ROP prevalence is probably the continuous improvement of intensive medical care of preterm infants, which results in an increasing survival rate of preterm infants with ever lower gestational age.

In cases where a treatment requiring stage of ROP occurs, there are two main treatment options: established laser coagulation and the more recent anti-VEGF injections. Laser coagulation has been standard of care (Hartnett, 2017) since the publication of the ETROP study results (Good, 2004). In 2011, the BEAT-ROP study showed that anti-VEGF therapy with bevacizumab was superior to laser therapy for ROP in zone I (Mintz-Hittner, 2011). Further studies, like the CARE-ROP and the RAINBOW study, investigated ranibizumab, another anti-VEGF drug, which was also shown to be effective for the treatment of ROP (Stahl et al., 2018, 2019). Based on these results, ranibizumab was approved for ROP treatment in 2019 in Europe and many other countries worldwide (EMA.Europa.eu, 2022). Mainly based on the results from the FIREFLEYE study (Stahl et al., 2022), aflibercept was approved as a second anti-VEGF agent for ROP in December 2022 (EMA.Europa.eu, 2023).

Clinical trials are the gold standard in medical research. However, due to their strict inclusion and exclusion criteria, they sometimes do not reflect all aspects of actual real-world practice. To close this gap, we established the German Retina.net ROP registry in 2011. In 2021, the registry was updated with regard to the collected parameters and database used and is now being continued as EU-ROP registry (Clinicaltrials.gov: NCT04939571) (Pfeil & Stahl, 2022; Stahl et al., 2012).

The aim of this article was to establish a procedure for joint analyses of data from different ROP registries, in this particular case the Retina.net ROP and the EU-ROP registry. This is done exemplary by a direct comparison of the two registries. For this purpose, data from the first years of the respective registries are used (2011 and 2021). The analysis will thus compare ROP data over a 10-year interval regarding demographics, treatment modalities, complications after treatment and retreatments.

2 | MATERIALS AND METHODS

The German Retina.net ROP and the EU-ROP registry, which are compared in this analysis, are both non-interventional, multicentre registries. The German data collection as well as its upgrade and European expansion were approved by the Ethics' committee in Greifswald (BB 165/19 and BB 165/19a) as well as by each centre's local Ethics' committee. Written informed consent for pseudonymized data collection was obtained from parents/legal guardians. EU-ROP registry data from centres outside Germany were excluded for this analysis as they did not exist for the 2011 comparator. The data for 2011 was documented by 7 centres and data for 2021 by 17 centres. Of the seven centres that participated in the Retina.net ROP registry in 2011, five were also involved in the EU-ROP registry in 2021, together with 12 additional German centres.

In both databases, data on demographic information and ROP management are collected. Small for gestational age (SGA) was determined according to (Voigt et al., 2014). Incomplete records did not constitute an exclusion criterion for the full patient record and were accounted for by giving the number of children or eyes as "*n*" for each database item for which the respective data were available.

Statistical analysis was done using SPSS V.27 (IBM, Armonk, NY, USA). Continuous variables are presented with median and interquartile range (IQR), in contrast to distribution of categorical variables, for which

percentage is given. Demographic parameters (birth weight, gestational age at birth, postmenstrual age at initial treatment, weight at initial treatment, weight gain between birth and initial treatment and postnatal age at initial treatment) were compared between 2011 and 2021 using t-test, for rates of gender, A-ROP and small for gestational age infants Fisher's exact tests were calculated. A p-value of ≤0.05 was considered statistically significant. Some of the data from the Retina.net ROP registry presented here have been published in previous analyses (Akman et al., 2022; Larsen et al., 2021; Retina.net ROP-Register-Studiengruppe et al., 2018; Walz et al., 2016).

3 | RESULTS

3.1 | Alignment of Retina.net ROP registry and EU-ROP registry

Registry items that only occurred in one registry (e.g. detailed information on laser and anti-VEGF therapy, which are only collected in the EU-ROP registry) were excluded from this analysis. Variables occurring in both registries, like demographic parameters such as birth weight and gestational age, type of treatment, underlying ROP severity, systemic and ophthalmic complications during the first 24 h after treatment, as well information on retreatment were included (Figure S1). As the international classification on ROP (ICROP) was adapted in 2021 (Chiang et al., 2021), the EU-ROP database incorporated this revised classification, including for example more detailed information on zone II (anterior vs. posterior) or plus disease (differentiation in no plus, pre-plus and plus), which had not been used in the Retina.net ROP registry. In order to make data comparable, data from 2021 were therefore transformed to the old nomenclature: anterior and posterior zone II are summarized as zone II, regular zone I and zone I secondary to notch are combined in zone I. "Pre-plus" was combined with "no plus" in line with German treatment guidelines where "pre-plus" disease does not warrant ROP treatment, while fully established plus disease leads in most stage/zone combinations to ROP treatment. Aggressive-posterior ROP (AP-ROP) and aggressive ROP (A-ROP) were combined in one category for the purpose of this paper and are referred to as A-ROP. In the Retina.net ROP registry, ROP classification was documented at the timepoint of decision for ROP treatment, while in the EU-ROP, ROP classification is documented at treatment itself. As a treatment decision might be reached a few days before the actual treatment, there might be a slight difference in ROP severity, which needs to be kept in mind when comparing ROP severity around treatment.

3.2 | Exemplary comparison of datasets from Retina.net ROP registry and EU-ROP registry

3.2.1 | Demographic parameters

For the 2011 cohort, 22 patients were included in the Retina.net ROP registry with all of them being treated bilaterally (n=44 eyes). In 2021, 44 patients were registered in the EU-ROP database, 42 infants receiving bilateral and 2 infants unilateral treatment (n=86 eyes). Demographic parameters of the two cohorts are summarized in Table 1. No significant difference between the two cohorts was observed for any of these parameters. Note that in the 2021 cohort, one child with a relatively high birthweight of 2060 g and a GA of 30.6 weeks is included, which suffered from a coccygeal atheroma weighing 840 g, which was removed surgically 2 weeks postnatally under intubation anaesthesia. The median data for birthweight and GA in 2021 are influenced by this and would be lower without this case. The number of children who were small for gestational age increased by a factor of 3.5 from 5% in 2011 to 16% in 2021 without being statistically significant (p=0.252, Fisher's exact test).

3.2.2 | ROP severity

The most common combination of zone, stage and plus disease was zone II stage 3+ in both years (70.5% in 2011, 65% in 2021; Figure 1a). A-ROP was relatively rare in both cohorts (4 eyes (9.1%) in 2011, and 2 eyes (2.3%) in 2021; p=0.179, Fisher's exact test; Figure 1a). For eyes with zone II, 3+ ROP, the number of clock hours affected by extraretinal proliferations was documented in both registries. While in 2011, most eyes with zone II, 3+ had proliferations in 10–12 clock hours (29%), in 2021 most treated eyes had extraretinal proliferations in 4–6 clock hours (38%; Figure 1b).

Most infants (54 of 66) had equal ROP severities in both eyes (2011: 19 of 22 patients (86.4%); 2021: 35 of 44 patients (79.5%)). The differences in ROP severity in

TABLE 1 Demographic parameters of treated infants. [Correction added on 22 December 2023, after first online publication: Table 1 was corrected in this current version.]

Year of initial treatment	2011	2021	p-Value
Number of centres	7	17	
Number of patients	22	44	
Number treated eyes	44	86	
Birth			
GA at birth [mean in weeks] (SD)	24.7 (1.4)	25.2 (2.0)	0.130
Birth weight [mean in g] (SD)	707.6 (194.6)	677.6 (279.9)	0.327
Small for Gestational Age [n, infants] (%)	1 (4.5)	7 (15.9)	0.252
Male [n, infants] (%)	15 (68)	26 (59)	0.593
Initial treatment			
PMA [mean in weeks] (SD)	36.4 (2.2)	37.3 (3.5)	0.117
PNA [mean in weeks] (SD)	11.3 (2.3)	12.1 (3.1)	0.127
Weight [mean in g] (SD) (n=12/27)	2.188 (473)	2.250 (963)	0.417
Weight gain since birth [mean in g/day] (SD) (n=12/27)	20.2 (5.2)	17.7 (5.1)	0.091

Abbreviations: GA, gestational age; PMA, postmenstrual age; PNA, postnatal age; SD, standard deviation.

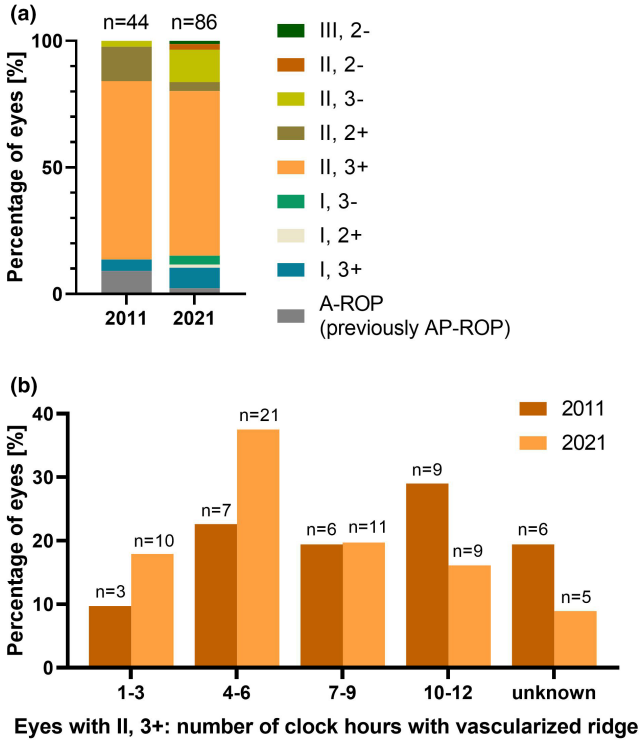

FIGURE 1 (a) Distribution of ROP severities in 2011 and 2021. (b) Relative rate of clock hours in eyes with ROP stage 3+ in zone II that show a vascularized ridge. The number with most frequently affected clock hours at time of initial treatment decreased from 10–12 clock hours (2011: 29%) to 4–6 clock hours (2021: 38%).

2011 ($n=3$ patients) were due to different stages ($n=2$ patients) or varying presence of plus disease ($n=1$ patient). In 2021, nine patients had different ROP severities between left and right eye due to different zones ($n=2$ patients), different stages ($n=4$ patients), a combination of different stages and different presence of plus disease ($n=1$ patient) or due to unilateral treatment warranted disease ($n=2$ patients). According to the modified ROP severity score established by Pivodic et al. (2021), all eyes ($n=43$) but one in 2011 were classified as severe ROP at initial treatment. The one eye treated for moderate ROP in 2011 had ROP stage 3− in zone II. In 2021, 72 eyes were treated due to severe ROP, 11 due to moderate ROP and 3 due to mild ROP (e.g. zone II, 2− or zone III, 2−; Figure 2b). The rate of eyes treated due to zone II, 3− ROP increased from 2.3% ($n=1$ eye) to 12.8% ($n=11$ eyes).

3.2.3 | Initial treatment and type of anaesthesia

In both cohorts, bilateral treatment with the same modality was most common (98.4%, 63 of 64 patients treated bilaterally for ROP). One child (2011) received bilateral laser plus additional bevacizumab treatment in one eye. Two children (4.5%, 2021) were only treated in one eye. Regarding treatment methods, we observed a paradigm shift between 2011 and 2021. While the percentage of laser coagulation decreased from 75% in 2011 to 11.6% in 2021, the number of anti-VEGF therapy increased from 18.2% in 2011 (bevacizumab only) to 86.1% in 2021 (ranibizumab only) (Figure 2a).

Regarding type of anaesthesia, laser coagulation was performed almost exclusively under intubation in both years (2011: 93.8%, $n=16$; 2021: 100%, $n=5$), while analgosedation (combination of analgesia and sedation with continued spontaneous breathing) was increasingly used for anti-VEGF therapy in 2021 (2011: 25%, $n=4$; 2021: 73.7%, $n=38$).

3.2.4 | Retreatments

The overall retreatment rate in both cohorts and over all treatment modalities was comparable (2011: 19%, $n=42$; 2021:17.1%, $n=82$; Figure 3a). After initial laser coagulation, about 20% ($n=6$ of 33 eyes in 2011; $n=2$ of 10 eyes in 2021; Figure 3b) required retreatment, which occurred on average after about 19 (2011) and at 13 days (2021). In eyes treated with bevacizumab, no retreatment was necessary ($n=6$). After initial treatment with ranibizumab, retreatment was necessary in 18.6% (Figure 3b) on average after 57 days (±25.5) (Figure 3c). After combination therapy, two eyes in 2011 (combination of laser and bevacizumab) and one eye in 2021 (combination of laser and ranibizumab) were retreated.

A second retreatment was necessary for five eyes ($n=3$ infants) in 2011 and none in 2021: One infant had initially received bilateral laser for zone II, 3+. After 19 days, the right eye was lasered again and to the left eye a combination of laser and cerclage was applied (no stage of ROP documented). The cerclage was removed after 229 days. Two other patients were diagnosed initially with bilateral A-ROP. One of these children was first treated with bilateral laser and bevacizumab, followed by retreatment with bilateral laser after 20 days. A second retreatment was bilateral bevacizumab and cryotherapy after another 29 days as A-ROP was still present. The second child had received bilateral laser as initial treatment and was retreated with laser 22 days later. As second retreatment, 29 days later, the patient received bilateral bevacizumab (Figure S2).

3.2.5 | Complications during the first 24 h after treatment

In 2011, no systemic complications were reported for the first 24 h after treatment. In 2021, one patient needed oxygen supplementation for 1 day after a retreatment with bilateral laser.

Regarding ophthalmological complications, in 2011, after an initial treatment with bilateral laser (left: zone II, 2+; right: zone II, 3+), one patient showed intra-ocular haemorrhage in both eyes. In 2021, one patient who was treated bilaterally with ranibizumab due to ROP zone II, 3− developed corneal erosions in both eyes, and one patient with the same treatment (ROP II, 3+) developed corneal opacities in both eyes.

3.2.6 | Deaths documented in the two cohorts

In 2011, one child (male, birth weight 696 g, GA 23.4 weeks with meconium ileus, bronchopulmonary dysplasia,

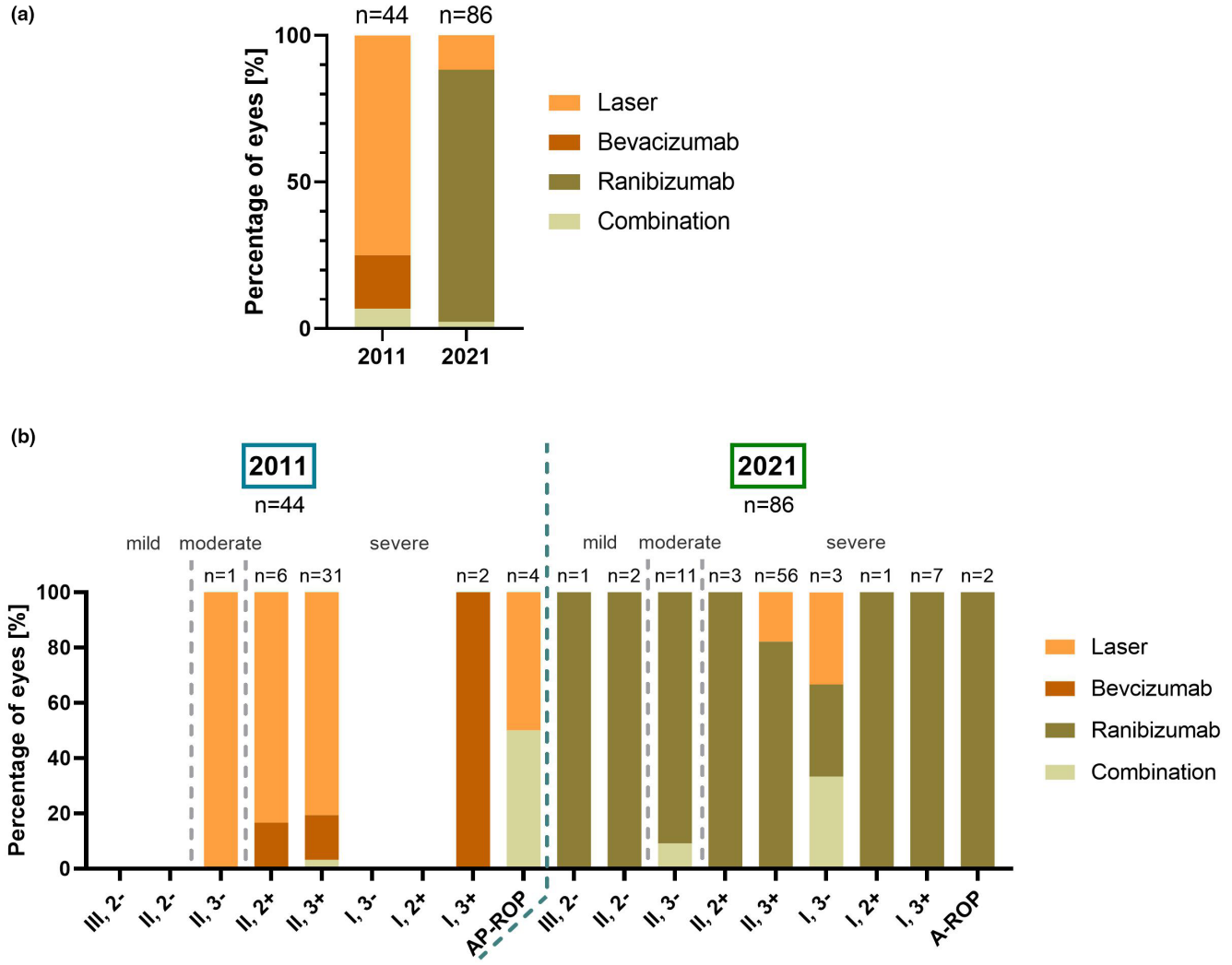

FIGURE 2 (a) Relative distribution of treatment methods. The most prevalent treatment modality shifted from laser coagulation (75%) in 2011 to anti-VEGF therapy with ranibizumab in 2021 (86.1%). Combination treatment in 2011 (6.8%) was laser and bevacizumab in three eyes (two infants) and in 2021 laser and ranibizumab in two eyes (one patient) (2.3%). (b) Relative proportion of treatment methods separated by ROP activity score levels. Categorization into mild, moderate and severe according to the modified ROP Activity Scale. In 2021, milder ROP severities were also treated ($n=3$). Overall, therapy changed from mainly laser (2011) to mainly ranibizumab (2021). Therapy for the most common severity (II, 3+) also switched from predominantly laser (2011: 80.7%; $n=31$) to predominantly ranibizumab (2021: 82.1%; $n=56$). All combination treatments were performed with laser and bevacizumab (2011, $n=3$) or laser and ranibizumab (2021, $n=2$).

cerebral haemorrhage grade 3+ and necrotising enterocolitis) died 19 days after bilateral bevacizumab at the age of 34.7 weeks PMA. In 2021, two children died 31 days (male, birth weight 535 g, GA 23.1 weeks with intraventricular haemorrhage grade II) and 34 days (male, birth weight 1060 g, GA 30.4 weeks with periventricular leucomalacia) after bilateral ranibizumab treatment at the age of 40.8 weeks PMA and 43.2 weeks PMA, respectively. Another child (male, birth weight 675 g, GA 24.6 weeks with sepsis) with initial treatment with bilateral laser and ranibizumab died 24 days after retreatment with a combination of laser and ranibizumab in the left eye. No further information on the reasons for death, or if a causal relationship was suspected, was documented in the databases.

4 | DISCUSSION

The aim of this article was to establish a procedure for joint analyses from different ROP registries and exemplify this by comparing data from the German Retina.net ROP registry and the EU-ROP registry with a 10-year interval (2011 vs. 2021). The key findings are: (1) Data from both registries can be aligned for joint analyses; (2) We observed a paradigm shift for ROP therapy in Germany between 2011 and 2021 from predominantly laser to predominantly anti-VEGF therapy; (3) The anti-VEGF agent used at the participating centres changed from exclusively bevacizumab in 2011 to exclusively ranibizumab in 2021; (4) In 2021, treatment for ROP stage 3+ in zone II was initiated earlier with a lower number of clock hours affected compared to 2011.

During expansion of the German Retina.net ROP registry to the international EU-ROP registry, the database parameters were revised together with an international team of ROP experts. In this process, the experiences made during the conduct of the Retina.net ROP registry were incorporated and we ensured that the new database reflected the most up-to-date research available, in particular the revised version of the

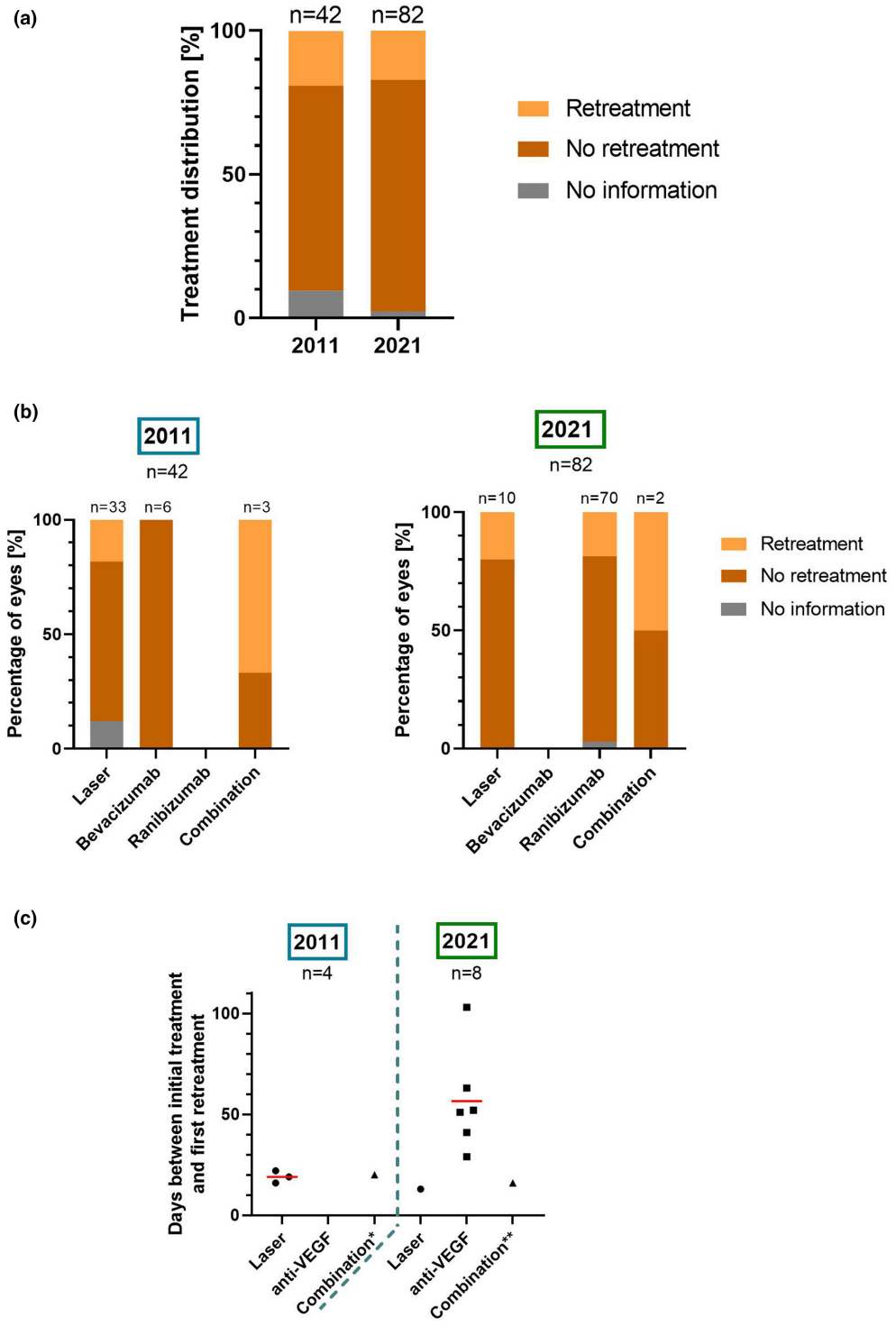

FIGURE 3 (a) Relative percentage of retreatments. The overall proportion of retreatments across both years and all treatment modalities was comparable (2011: 19%; 2021: 17.1%). No information: these patients were transferred to another hospital after initial treatment. One patient died in 2011 after the initial treatment, two patients in 2021. (b) Distribution of retreatment rates by treatment modality of initial treatment. Retreatment rate after initial laser therapy was comparable between both years (2011: 18.2%; 2021: 20%). For ranibizumab, the retreatment rate was 18.6%. After the initial treatment, one patient died in 2011 and two patients in 2021. (c) Time interval between initial treatment and first retreatment. After initial laser coagulation, retreatment was necessary after an average of 19 days (2011). Retreatment after initial treatment with ranibizumab occurred an average of 57 days later. *one patient with bilateral laser and bevacizumab. **one patient with bilateral laser and ranibizumab.

international classification of ROP (ICROP-3) (Chiang et al., 2021). This resulted in a more detailed data collection with regard to ROP parameters (e.g. a differentiation between zone II anterior and posterior) in the EU-ROP registry compared to the Retina.net ROP registry. As a consequence, the more detailed information collected in the EU-ROP registry had to be reduced in granularity in order to be aligned with the Retina.net registry. Therefore, the full potential of the EU-ROP registry could not be used in this study as the registry with lower granularity determines the level of analyses that can be performed in a comparative approach.

Recently presented data from our group has already documented a transition in treatment modalities from

predominantly laser in 2011 (75%) to a predominantly anti-VEGF-based therapy in 2020 (61%, only ranibizumab) (Pfeil, 2021). The current analysis demonstrates that this trend continues and is even enhancing – at least at our participating centres (2021: 86.1% anti-VEGF, only ranibizumab). As in 2021, several new centres joined the EU-ROP project one could argue that these are the cause for this increase in use of anti-VEGF. We observed the same trend, however, when data analysis was restricted to centres that participated in both years (data not shown).

Potential reasons for the overall increase in use of anti-VEGF in German centres might be the growing evidence from several clinical trials that anti-VEGF in ROP is efficacious and safe (Stahl et al., 2018, 2019, 2022) and the adoption of anti-VEGF therapy by the regulatory authorities (EMA.Europa.eu, 2022, 2023). The revised recommendation on the use of anti-VEGF for the treatment of ROP in Germany in 2020 recommends anti-VEGF treatment for ROP in zone I, while for zone II, no preference for either anti-VEGF or laser coagulation is given (Deutsche Ophthalmologische Gesellschaft e. V. (DOG), Retinologische Gesellschaft e. V. (RG), & Berufsverband der Augenärzte Deutschlands e. V. (BVA), 2020). Despite the fact that a clear recommendation for anti-VEGF over laser is only given for zone I ROP, we do see an overall increase in the use of anti-VEGF in Germany – also for zone II disease (Deutsche Ophthalmologische Gesellschaft e. V. (DOG), Retinologische Gesellschaft e. V. (RG), & Berufsverband der Augenärzte Deutschlands e. V. (BVA), 2020). Another potential reason might be a more practical one: in clinical routine, it is often easier to organize an anti-VEGF treatment than a laser coagulation due to the fact that no general anaesthesia is needed, the laser coagulation needs to be conducted by an experienced ROP specialist, which might not be available at the respective time point and the laser procedure lasts much longer than an intravitreal injection. The use of bevacizumab remains off-label in Germany which may explain why since the existence of an on-label alternative, bevacizumab use has decreased significantly at participating centres and ranibizumab was the only anti-VEGF agent used in 2021. We also need to keep in mind that despite the increase in the number of participating centres, even data from 2021 represents only about 10% of treated ROP cases in Germany. Although our participating centres are evenly distributed across Germany, some regional bias cannot fully be ruled out. In addition, participating centres are mainly academic hospitals which might be more prone to develop and adapt new treatment concepts compared to smaller centres.

Besides the recommendation of anti-VEGF as treatment option in ROP, the 2020 revision of the German ROP screening and treatment guidelines has opened the treatment window for ROP stage 3+ in zone II for earlier disease manifestations. While the old treatment guidelines recommended treatment for ROP 3+, zone II only if five continuous or eight cumulative clock hours were affected, the new guidelines allow treatment for ROP 3+, zone II with only one clock hour affected by extraretinal proliferations (Deutsche Ophthalmologische Gesellschaft e. V. (DOG), Retinologische Gesellschaft e. V. (RG), & Berufsverband der Augenärzte Deutschlands e. V. (BVA), 2020). Our data reflect this change, as in 2021 most eyes treated for ROP 3+, zone II had 4–6 clock hours affected by extraretinal proliferations while the majority of eyes in 2011 had 10–12 clock hours affected (see Figure 1b).

Several eyes were treated due to moderate ROP, such as zone II, 2− or zone III, 2− (see Figure 2b). Unfortunately, neither in the Retina.net ROP registry, nor in the EU-ROP registry, the reason for treatments outside of treatment indications is documented. Therefore, one can only speculate about potential reasons. For example, co-treatment with a contralateral eye with severe ROP to avoid a second procedure to treat the currently only moderately affected eye. For cases where both eyes are treated due to moderate ROP, it could be speculated that swift disease progression during the days before treatment decision might have led to early treatment decision. With the increasing use of ranibizumab and existing data showing comparably high retreatment rates for ranibizumab (Chmielarz-Czarnocińska et al., 2021; Holmström et al., 2020), we compared the retreatment rates in our two cohorts. First of all, we found the retreatment rate was comparable in both years (2011: 19%; 2021: 17.1%). One Polish study reports significantly higher overall retreatment rates of 36% (Chmielarz-Czarnocińska et al., 2021), while the retreatment rate was slightly lower in a UK cohort (13.1%) (UK Retinopathy of Prematurity Special Interest Group et al., 2018). [Correction added on 22 December 2023, after first online publication: The Polish retreatment rate was corrected in the preceding sentence in this version.]. In our analysis, the most frequent retreatment occurred following primary laser treatment (20%). This may very likely include retreatments due to skip lesions that were identified in one of the post-operative follow-ups after laser treatment. After ranibizumab, 18.6% of the eyes in our cohort required at least one retreatment and no eye with primary bevacizumab was retreated. These percentages must be interpreted with caution due to the relatively low overall numbers. Compared to other studies from Poland and Sweden (Chmielarz-Czarnocińska et al., 2021; Holmström et al., 2020), which had retreatment rates of more than 60% after ranibizumab, the retreatment rate in our study was significantly lower. It must be distinguished, however, whether retreatment after anti-VEGF is given for true reactivation of ROP activity or for persistent avascular retina (PAR). Based on the predominant approach to PAR in a particular centre (or country), retreatment rates after anti-VEGF will vary significantly depending on whether PAR is always regarded as an indication for laser or is observed without treatment. In the future, the EU-ROP registry will hopefully provide more data to further investigate the need (and reasons) for retreatment after the different treatment options.

One of the limitations of our analysis is that mainly data from University Hospitals and dedicated ROP centres is included. Hence, our data are not representative for Germany on a country level and we estimate that this analysis captures only 5%–10% of all 400–600 ROP cases treated annually in Germany (Lorenz, 2008). In the future, with further growth of the EU-ROP registry and more centres joining, we will be able to provide data that are not only representative for the participating ROP centres but

hopefully for Germany (and other countries) on a national level. Importantly, the current analysis demonstrates that it is possible to compare ROP data from different registries. This opens the opportunity to also compare data from EU-ROP to other national or international registries.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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