COMPARISON OF PORTABLE RETINOGRAPHS IN TERMS OF PRACTICALITY AND EFFECTIVENESS IN IDENTIFYING OCULAR FINDINGS IN NEWBORNS WITH RETINOPATHY OF PREMATURITY: CASE SERIES

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PURPOSE

Retinopathy of Prematurity (ROP) is a complex condition that can result in irreversible vision damage if not diagnosed and treated early. Portable retinographs (PR) with artificial intelligence software have been considered promising for the detection and monitoring of ROP, making it possible to capture retinal images non-invasively, share them, and evaluate them remotely. Therefore we aimed to share two cases of ROP managed with PR and compare their efficacy.

METHODS

An ophthalmologist with experience in ROP used 2 portable devices (Vista View by Volk and Eyer by Phelcom Technologies) to register images of 2 patients and send them for analysis in Ribeirão Preto. Patients records were also reviewed.

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Case presentation 01

A newborn with a gestational age of 25 weeks and 2 days had an APGAR of 3 and 6, requiring resuscitation in the delivery room and mechanical ventilation. The first ophthalmological examination at 33 weeks and 5 days of corrected age revealed plus disease. (figure 1; figure 2; figure 3).

Figure 1: Retinography of newborn 01 in Eyer

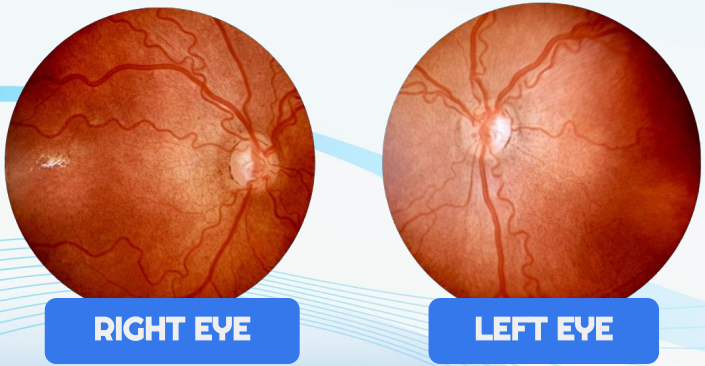

Figure 2: Zone III of the left eye before treatment in both PR

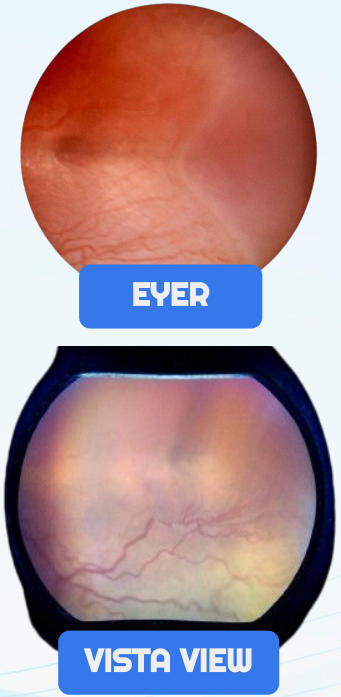

Figure 3: Retinography of newborn 01 in Vista View

Case presentation 01

We applied an anti-angiogenic agent (Aflibercept 0.01 ml) intravitreally in both eyes of both patients (figure 4; figure 5).

Figure 4: Retinography two weeks after treatment in Eyer

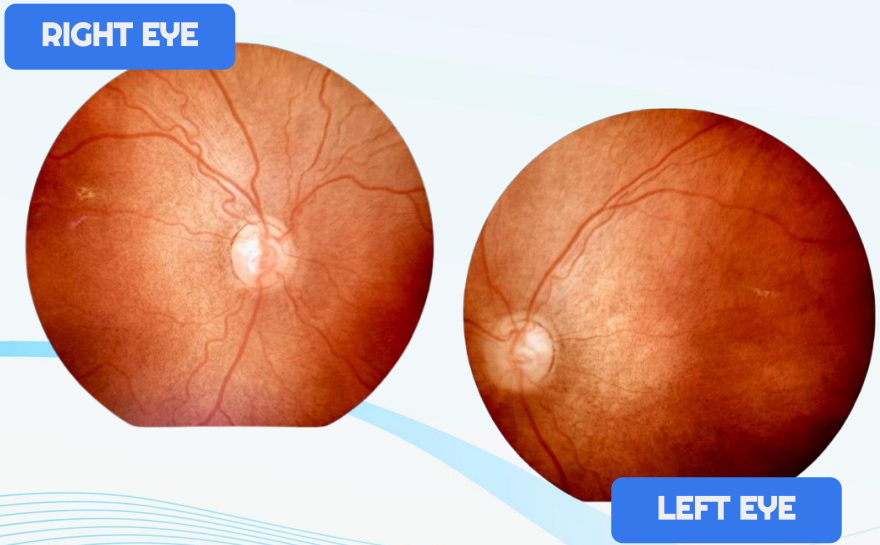

Figure 5: Retinography two weeks after treatment in Vista View

Case presentation 02

Figure 6: Nasal region of the left eye in Eyer before and after treatment

Figure 7: Retinography of newborn 2 in Vista View

The patient was born at a gestational age of 24 weeks and 6 days, weighing 780 g in a maternity hospital in the countryside of the state. Ophthalmological examination revealed Irian rigidity, due to the presence of neovessels, making pupil dilation difficult in both eye. Treatment with intravitreal Aflibercept 0.01 ml was also indicated (Figures 6 and 7).

Discussion

The use of these mobile devices optimized ophthalmological treatment through telemedicine. It was possible to discuss treatment options with multiple professionals. In terms of technical quality and ease of use, the devices seemed to perform similarly, but cost-benefit analyses are needed for more specific scenarios.

Table 1: Comparison between PR

	Eyer	Vista View
Field of view	45°	55°
Image resolution	1600 x 1600 pixels	31 pixels/degree
Minimum pupil size	3 mm	4 mm
Weight	690 g	560 g
Telemedicine integration	Eyer cloud	Virtual by Volk
Battery	3400 mAH	4630 mAh