

Imported malaria in the non-endemic area in Brazil: The experience of University of Campinas Hospital



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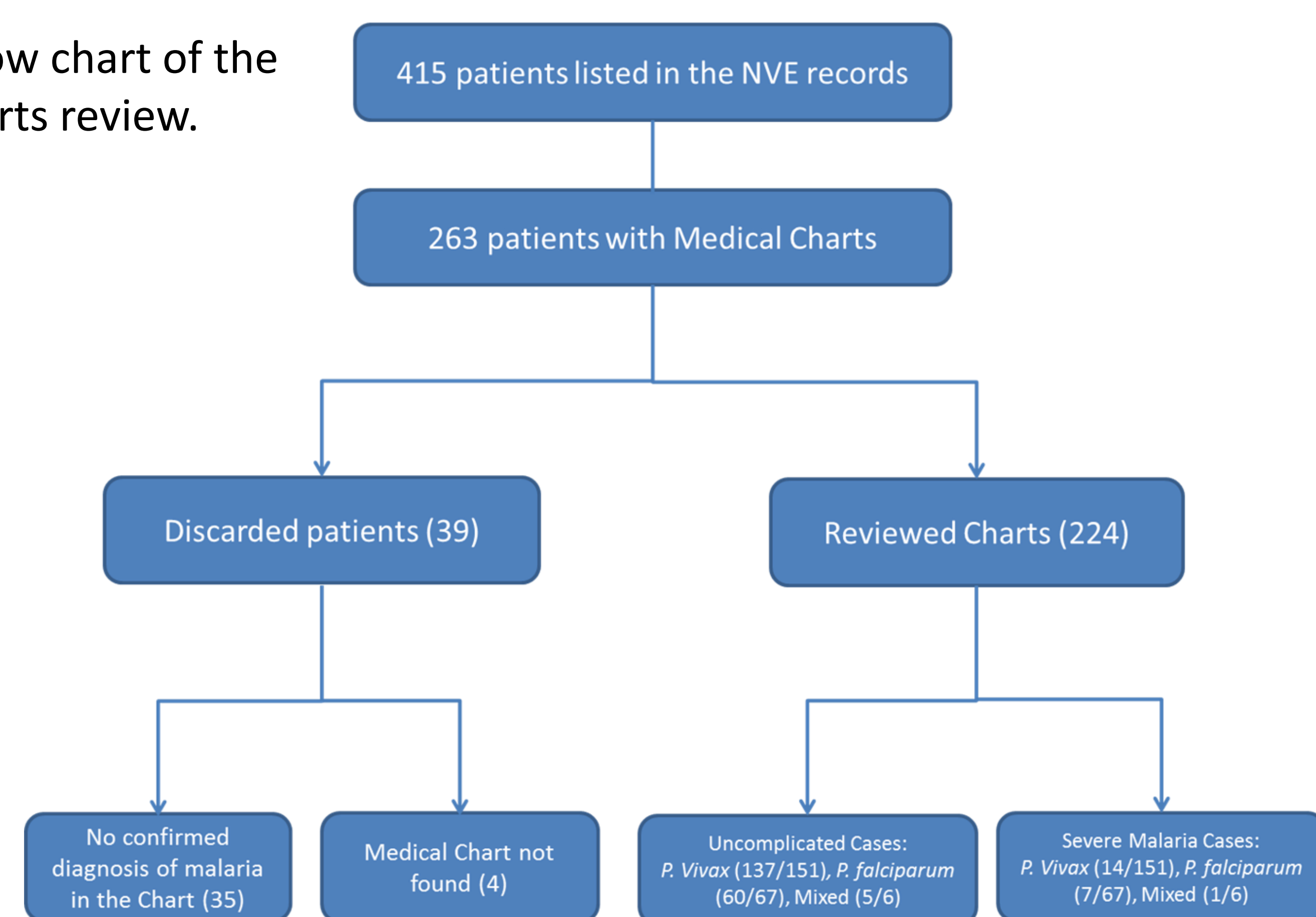
Background

Although malaria is almost exclusive of the Brazilian Amazon, some concerns are raised regarding imported malaria to non-endemic areas of the country, especially due to delayed diagnosis and increased risk of complications.

Methods

The University Hospital of Campinas (HC-UNICAMP) is a reference center for the diagnosis and treatment of malaria in the extra-Amazon area. A retrospective case series is presented with analysis of 263 medical charts for the clinical and epidemiological characterization of malaria cases treated at HC-UNICAMP from 1998 to 2011 (Figure 1).

Figure 1. Flow chart of the medical charts review.



Results

Amongst all medical charts, 224 patients had a confirmed diagnosis of malaria. *Plasmodium vivax* and *Plasmodium falciparum* were responsible for 67% and 30% of infections, respectively. Mostly of those patients were males (83%) at productive age (median 37 years) (Table 1). Severe complications did not differ significantly from *P. vivax* (12%, 18 cases) and *P falciparum* (18%, 12 cases). There was only one severe case of mixed infection (Pf/Pv). Thrombocytopenia was the most common laboratory alteration (85% of surveyed subjects). Anemia was present in 34% of the subjects.

Table 1. General findings amongst malaria patients at HC-UNICAMP, 1998-2011.

Variable	Infecting species					
	<i>P. falciparum</i>		<i>P. vivax</i>		Pf/Pv	
N	67/224	30%	150/224	67%	6/224	3%
Gender:						
Male	59/67	88% ^a	124/151	82%	3/6	50% ^a
Female	8/68	12%	27/150	18%	3/6	50%
Age:						
Mean±SD	35	±13	40	±16	26	±18
Median [p25-p75]	35	[26-45] ^a	39	[28-52] ^a	19	[15-41]
Severe Cases	12/67	18%	18/151	12%	1/6	17%
Thrombocytopenia	44/52	85%	80/94	85%	4/4	100%
Anemia	19/54	35%	29/95	31%	3/3	100%

The pair of letters represents in a row represents that the values between the two groups were statistically significant, with the P-value:
a. P<0.05.

Conclusions

The infection by *Plasmodium vivax* may be responsible for severe cases of malaria in a proportion close to that observed for *P. falciparum* imported cases in an extra-Amazon area in Brazil, and in a much higher proportion than the severity found in the Amazon area. These observations show that *Plasmodium vivax* infections in the Brazilian territory are not benign, especially in the non-endemic area.

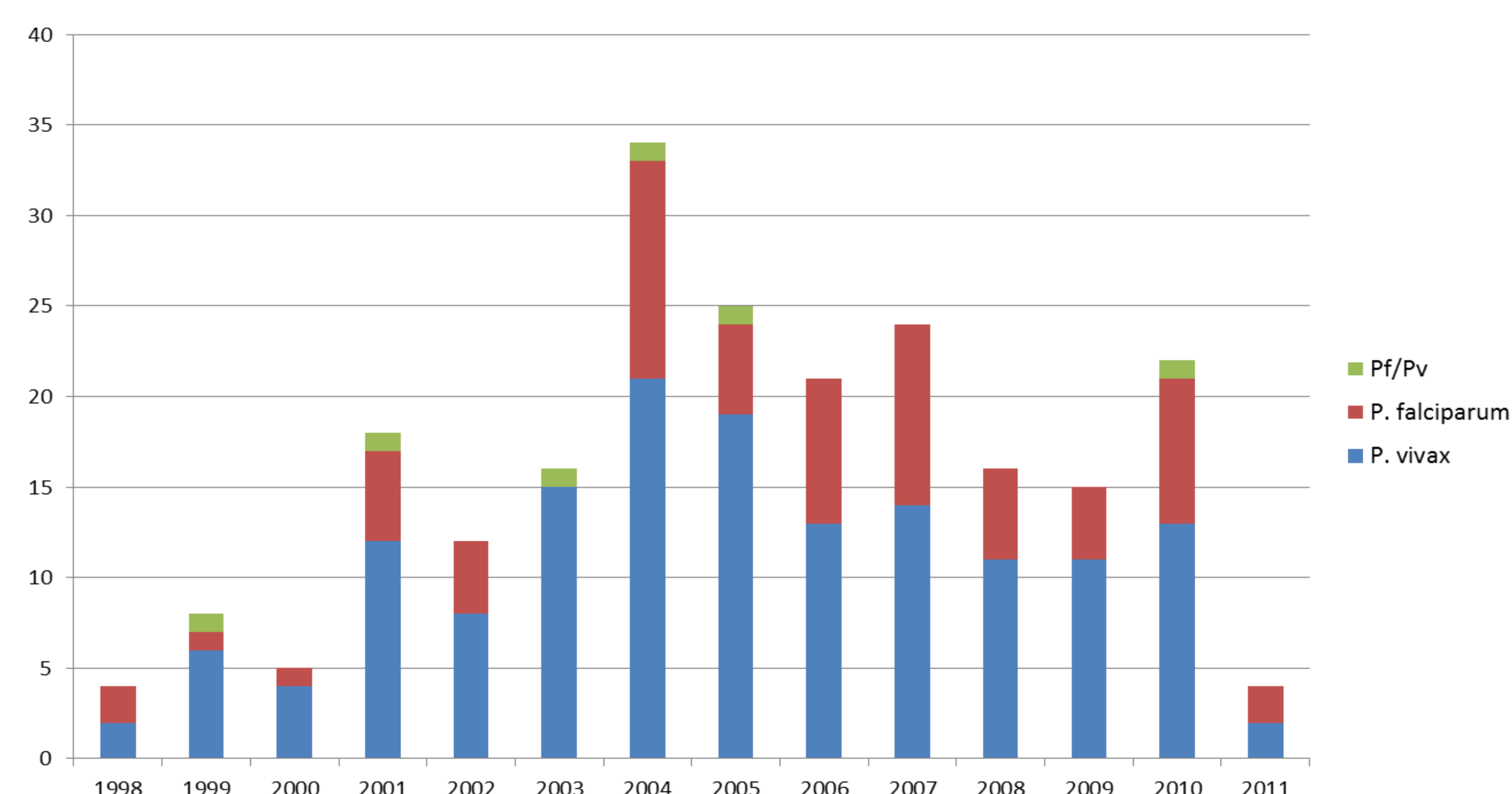


Figure 2. Distribution of cases by species and year. The distribution of cases by year is shown. No special relationship with the total of Brazilian cases or any seasonality in the cases were identified. The 2011 cases were recorded until the month of April (n = 224).

References

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