



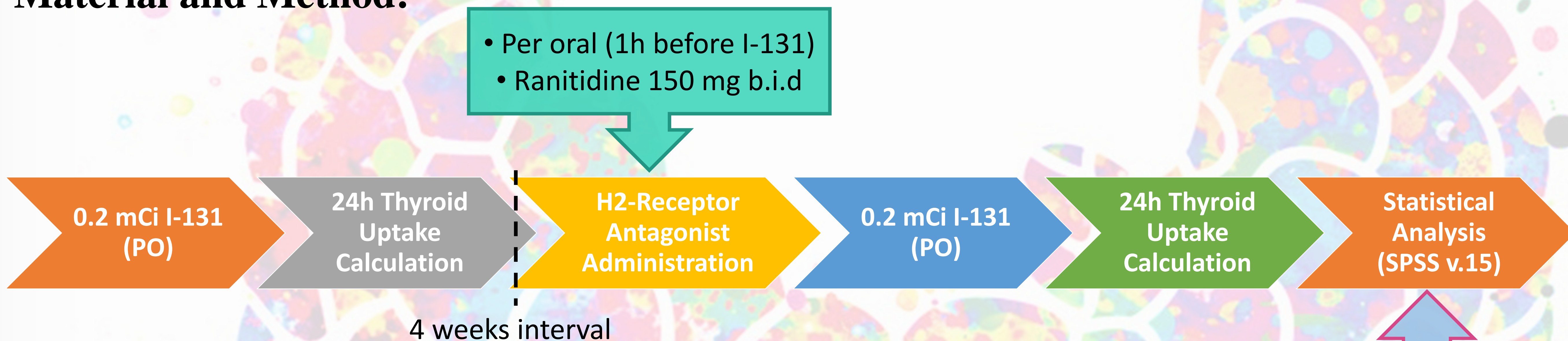
The Influence of H2-Receptor Antagonist Administration to the 24-h Uptake of I-131 in the Thyroid Gland

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Introduction: Hyperthyroidism and thyroid carcinoma are quite common in the world. In Indonesia, hyperthyroidism has a 6,9 % prevalence and according to GLOBOCAN 2018, thyroid carcinoma is the eleventh most prevalent carcinoma in Indonesia. Radioactive iodine (NaI-131) has been used as one of the option in hyperthyroidism and thyroid carcinoma management. NaI-131 can be administered orally. NaI-131 will enter the systemic after being absorbed at the intestine and then will be taken up by the thyroid gland and other organs those express Natrium-iodide symporter (NIS). H2-receptor antagonist (H2RAs) is a medication that often been given before administration of NaI-131. A predecessor study showed that H2RAs will prolong the gastric emptying time that could cause alteration of the NaI-131 biodistribution. The aim of this study is to determine the value and the difference in value of the 24-hours NaI-131 uptake in the thyroid gland pre- and post-H2RAs administration.

Material and Method:



Result:

Table 1. Subject Characteristic

No.	Gender	Age (years)	fT4 (ng/dL)	24-h I-131 uptake in thyroid gland pre- H2RA administration (%)	24-h I-131 uptake in thyroid gland pre- H2RA administration (%)
1	P	48	1,1	21,1	17,3
2	P	24	1,2	18,5	16,1
3	P	34	1,3	20,1	15,1
4	L	33	1,8	49,4	39,4
5	L	28	1,4	20,1	17,7
6	P	43	0,8	33,3	14,9
7	P	39	1,0	35,3	22,7
8	P	53	1,1	57,8	31,1
9	P	55	1,2	30,6	24,2
10	P	44	1,1	15,7	14,6
11	P	35	1,2	11,1	8,1
12	P	37	1,5	18,0	16,0
13	L	34	1,6	16,8	12,8
14	P	20	1,4	29,0	20,2

Table 2. Comparison of the 24-h I-131 uptake in thyroid gland pre and post-H2RA administration

24-h I-131 uptake in the thyroid gland	Measurement		p-value*
	Pre- H2RA administration	Post-H2RA administration	
Median	20.6	16.7	< 0.001
Range	11.1 – 57.8	8.1 – 39.4	

*Wilcoxon test

Table 3. 24-h I-131 uptake thyroid gland per and post-H2RA administration

	Median	Range
24-h I-131 uptake reduction in the thyroid gland	4.5	1.1 – 26.7
Percentage of 24-h I-131 uptake reduction in thyroid gland	22.4	7.0 – 55.3

- Shapiro-Wilk → data distribution
- Wilcoxon → the significance of the differences
- p value < 0.05 → significant

Discussion: I-131 can cause damage to gastric mucosa (manifest as acute gastritis). Therefore, a premedication is needed, such as H2-receptor antagonist or Proton pump inhibitor. H2-receptor antagonist suppresses the production of gastric acid and affect the motility of the stomach & prolong the gastric emptying time. In this study, there was significant difference of 24-h I-131 uptake between pre- and post-H2RA administration with median reduction of 22.4% (p < 0.001). This will caused the reduced of 24-h I-131 uptake value in thyroid gland.

Conclusion: H2-receptor antagonist decreased the 24-hour NaI-131 uptake on thyroid gland significantly.

Keywords: H2-receptor antagonist, radioactive iodine, thyroid gland 24-hours uptake.