



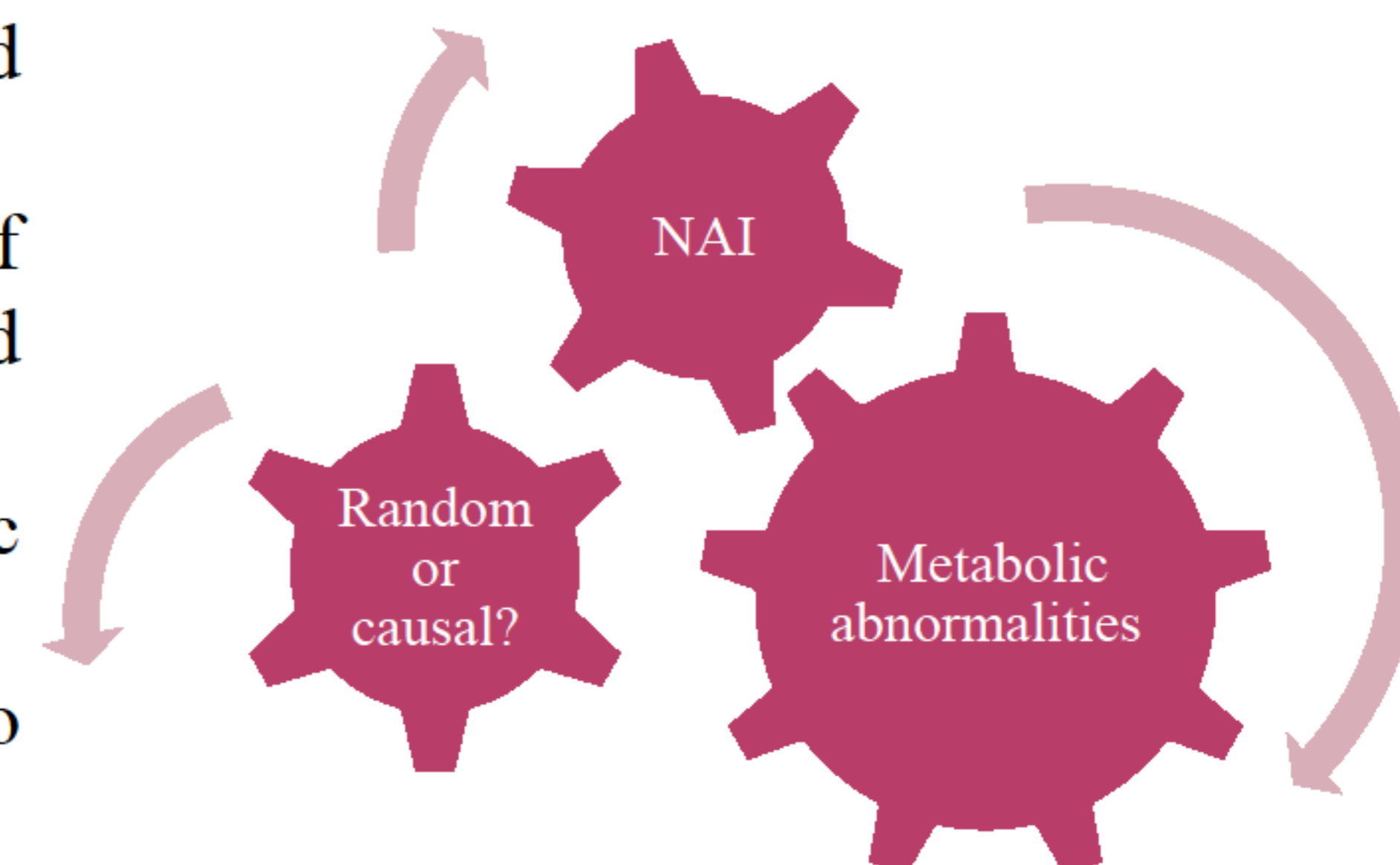
# Metabolic abnormalities in patients with Nonfunctional Adrenal Incidentaloma: random or causal?

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## Introduction

- With a prevalence of 0.5-2% in computed tomography series, incidentally diagnosed nonfunctional adrenal tumors become more and more common in clinical practice (1).
- It is not clear whether nonfunctional adrenal incidentaloma (NAI) increases the risk of atherosclerosis and metabolic syndrome or whether this type of adrenal tumor has been found more frequently in patients with cardiometabolic risk factors (2).
- The presence of adrenal incidentaloma has been proposed as a new cause of metabolic syndrome (3).
- The increased prevalence of cardiovascular and metabolic risk factors has been attributed to slightly increased cortisol production from these tumors (3).



## Methods and Results

### ➤ Retrospective study:

- 48 patients diagnosed with adrenal tumors on computed tomography in one year interval (January 2014 – December 2014) evaluated at the Endocrinology Department Iasi.
- 40 females, 8 males (fig.1)
- age between 21 and 84 years (mean age 59 10.7) (fig.2)
- **Including criteria**
  - an incidentally discovery of adrenal tumor
- **Excluding criteria**
  - known malignancies
  - signs or symptoms of hormone excess which could determine the imagistic investigation
  - subclinical disease, with adrenal axis modifications.
- **Correlations (Table nr.1)**

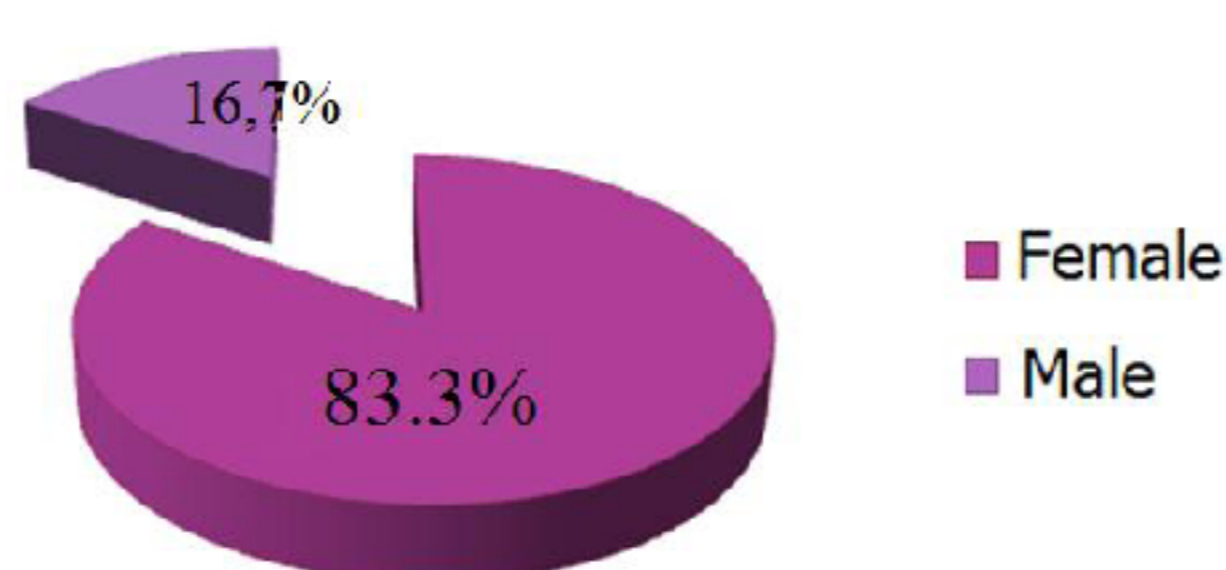


Fig. 1 Distribution by gender

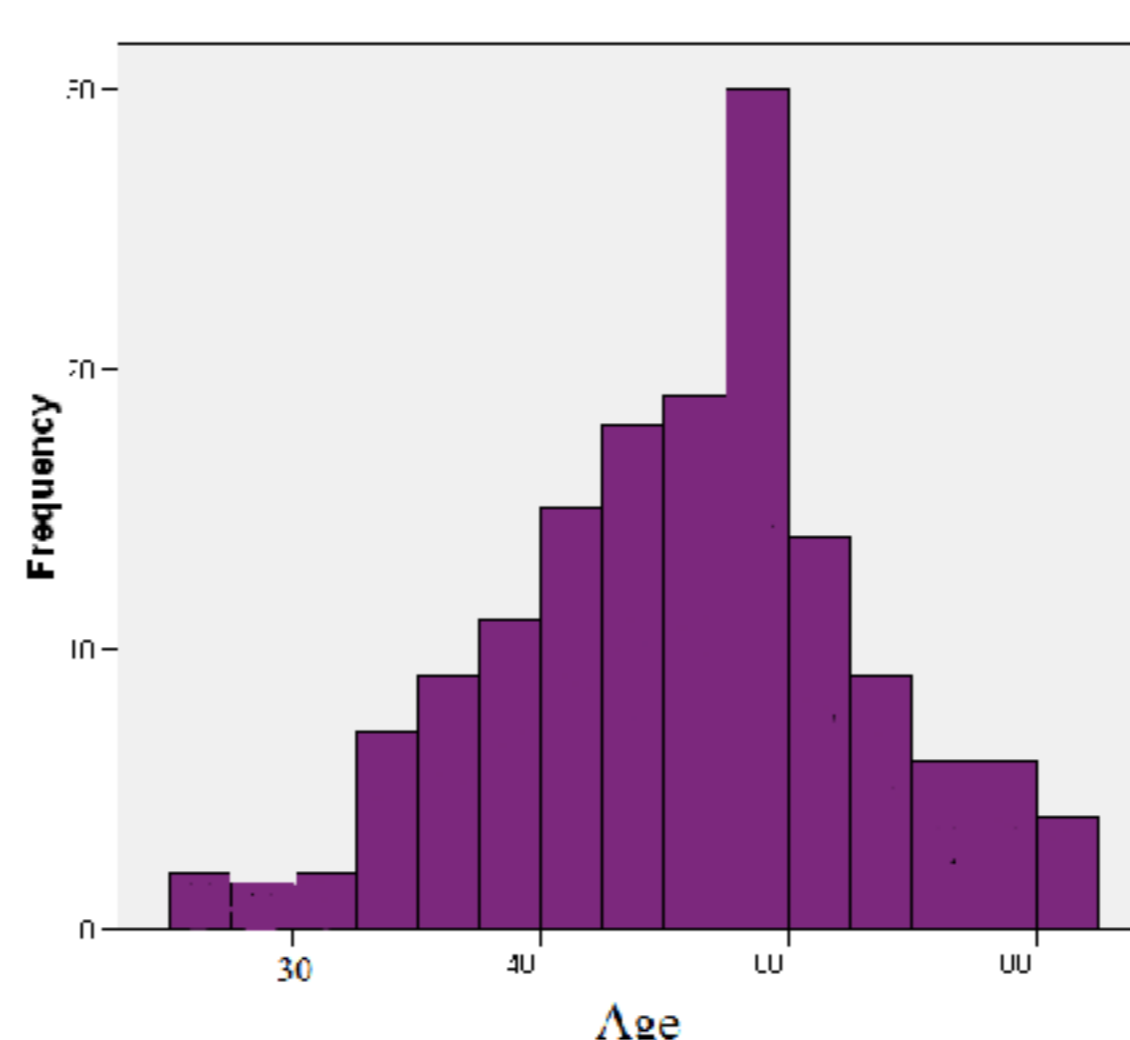
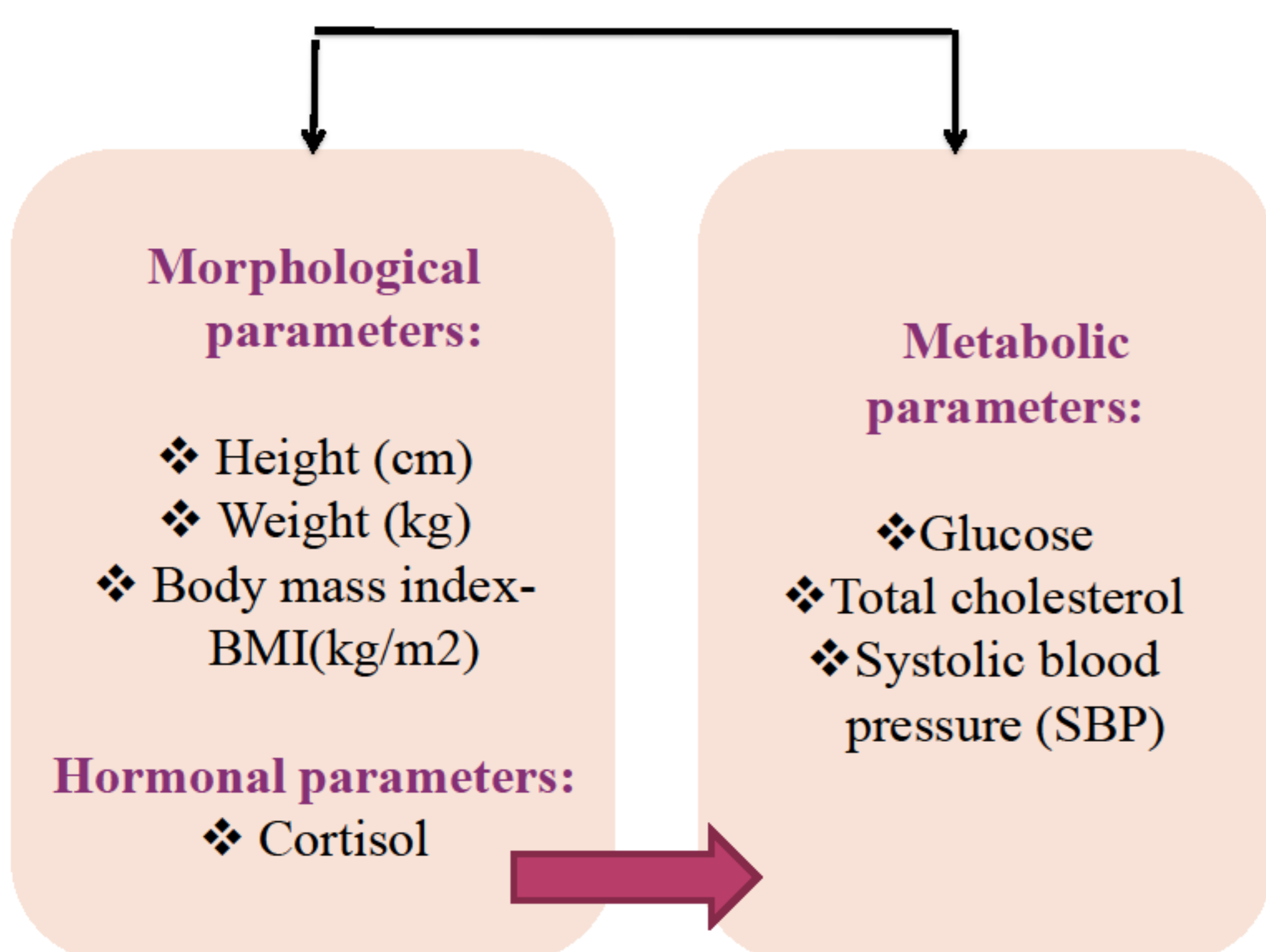
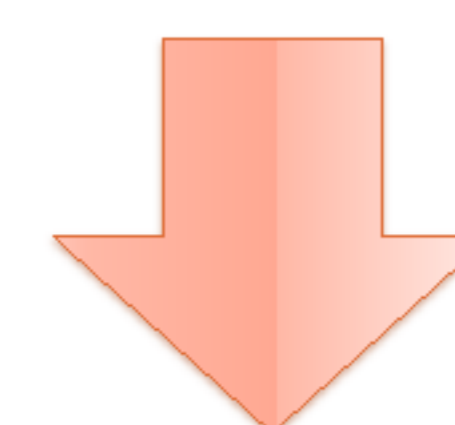


Fig.2 Distribution of cases by age

### ➤ Methods and results:

Table nr. 2: Correlations between the metabolic parameters and cortisol

Group of study	Correlation	Value of r coefficient
<b>Group of 48 patients with NAI</b>	Δ glucose vs BMI	0.690666
	Δ T-Cholesterol vs BMI	0.743198
	SBP vs BMI	0.983937
	Δ cortisol vs BMI	0.350854
	Δ cortisol vs ΔCh-T	0.38 8023
	Δcortisol vs ΔGlucose	0.250423
	Δcortisol vs SBP	0.201088



### ➤ Results:

- Mean body mass index (BMI) was 29.6 5.9 kg/m<sup>2</sup>:
  - 12 patients with normal weight, 3 overweight and 33 obese.
- Arterial hypertension was diagnosed in 43 patients (89.58%), diabetes or impaired glucose tolerance in 25 patients (52%) and hypercholesterolemia in 45 patients (93.75%).
- A significant positive correlation between BMI, glucose (r=0.69, p<0.05), total cholesterol (r=0.74) and systolic blood pressure (r=0.98) values was recorded.
- Cortisol remained within normal limits, but a slight positive correlation with cholesterol (r=0.38), systolic blood pressure (r=0.2), glucose (r=0.25) and BMI (r=0.35) was observed.

## Discussions

- To date, there are no clear data supporting that NAI may lead to severe clinical consequences. This may be due to the lack of large cross-sectional and longitudinal studies and limitations concerning the diagnosis, which is still a matter of controversial procedures (1).
- The association of NAI and metabolic syndrome confirms that even subclinical hypercortisolism has an impact on glucose metabolism, according to previous findings (1).
- It is difficult to conclude whether the results of previous studies reflect the increased prevalence of obesity, hypertension, and insulin resistance in patients with adrenal incidentaloma or whether it is the adrenal incidentalomas - even when nonfunctional according to current evaluation criteria - that cause the increased cardiometabolic risk (2).
- New, more stringent criteria to detect disturbed cortisol secretion from adrenal incidentalomas will be necessary to identify patients with increased cardiometabolic risk (3).

## Conclusions

- It is still a matter of debate whether NAI increases the risk of metabolic syndrome, having some degree of autonomous adrenal function, with subtle modifications before measurable changes of adrenal axis.
- Although the retrospective nature of our data did not allow us to draw any conclusions about the cause of increased prevalence of metabolic abnormalities, we suggest that some degree of adrenal autonomy - not recognized by current methods - is responsible for increased hormonal secretion and increased metabolic risk.
- These findings need to be confirmed by prospective studies, raising questions about the need for more reliable and sensitive tests to diagnose subclinical hypercortisolism.
- On the other hand, future findings could help in therapeutic decision making (conservative versus surgery approach), particularly in patients with NAI.

## References:

- (1) Guido Di Dalmazi et al. Progressively increased patterns of subclinical cortisol hypersecretion in adrenal incidentalomas differently predict major metabolic and cardiovascular outcomes: a large cross-sectional study. *European Journal of Endocrinology* 2012;166:669–677 (2) Yesim Erbil et al. Cardiovascular Risk in Patients with Nonfunctional Adrenal Incidentaloma: Myth or Reality?. *World J Surg* 2009;33:2099–2105 (3) Terzolo M et al. Adrenal incidentaloma: a new cause of metabolic syndrome? *J Clin Endocrinol Metab* 7:998–1003. (4) Hensen J, Buhl M, Bahr V et al (1990) Endocrine activity of silent adrenocortical adenoma is uncovered by response to corticotropin-releasing hormone. *Klin Wochenschr* 68:608–614

