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Clarkson syndrome: a rare disease for a first approach to scientific research



Institute of
Electronics
Computer and
Telecommunication
Engineering

Anna Lunghi*, Davide Mapelli°, Alessandro Rizzi°, Clara Tacconi* con Diego Liberati

*Liceo Classico Giuseppe Parini, Milano

°Liceo Scientifico Albert Einstein, Milano

Outline

1. Context and motivation

- Literature analysis
- Gender disparity among light chains in monoclonal IgG

2. Data analysis

- Weight, diuresis and heart rate time course for a patient
- Weight time course for the patient and two healthy volunteers

3. Lessons learned

- Bibliography
- Writing and presenting
- Organizational skills
- Informatics tools

4. Acknowledgements & References

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Context and motivation

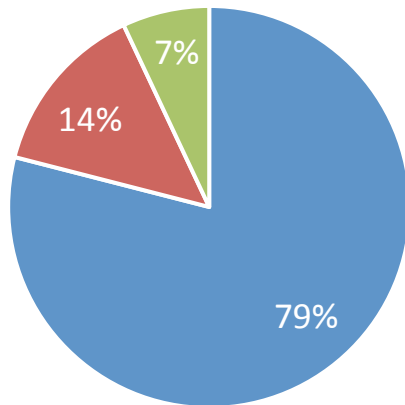
Literature analysis

- Causes are unknown [\[1\]](#)
- Symptoms appear cyclically with acute phases [\[1\]](#)
- The capillary permeability seems to be due to vascular plates contraction [\[2\]](#)
- Common symptoms are massive daily weight and diuresis variations and generalized edema due to abnormal vascular permeability [\[2\]](#)
- The non apoptotic pathogen is present only in episodic serum that irritate also healthy cells [\[3\]](#)
- Most patients present a monoclonal immunoglobulin in plasma [\[3\]](#)

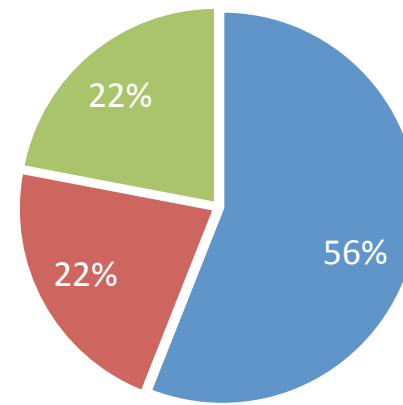
Possible gender disparity among light chains in monoclonal IgG

It seems that there is a different distribution of the kind of light chain (κ and λ) in immunoglobulins in males and females [\[3\]](#)

Males (14)



Females (9)



■ light chain κ ■ light chain λ ■ unknown

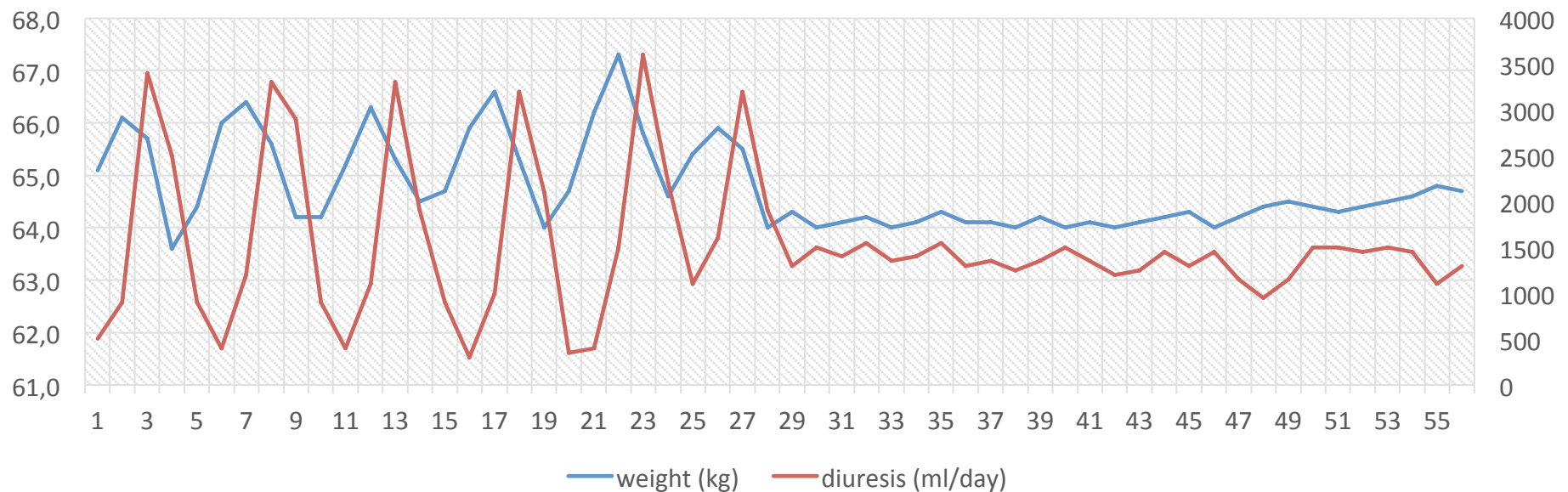
■ light chain κ ■ light chain λ ■ unknown

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Data analysis

Patient weight and diuresis

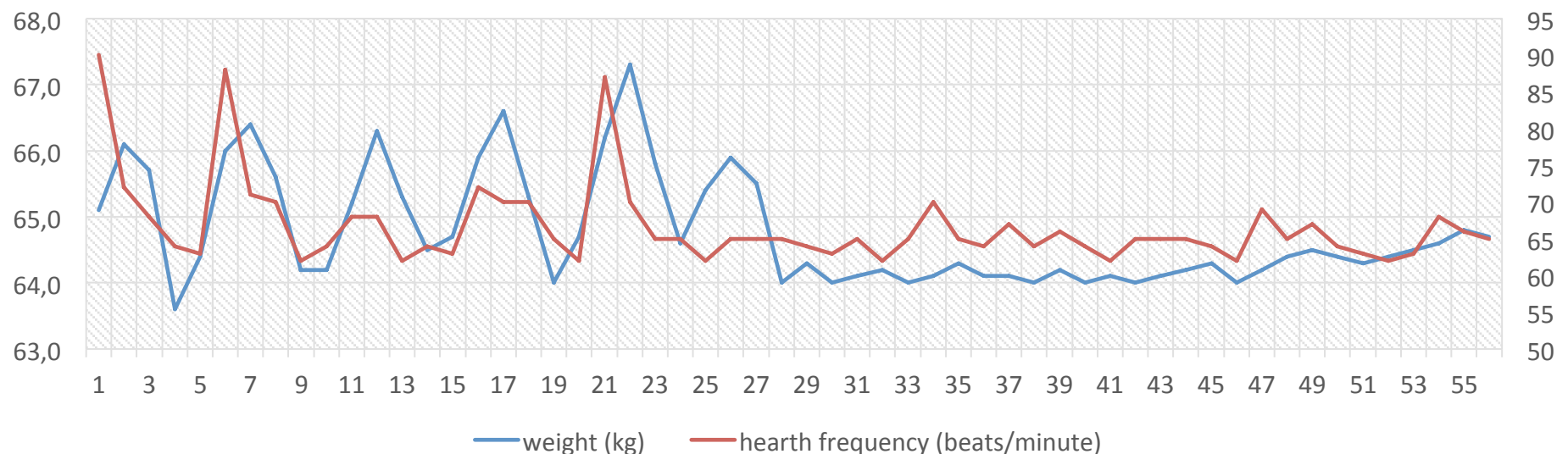
Four weeks are shown before and four more during the first immunoglobulin treatment starting on day 29



Diuresis course appears to be very similar, just one day delayed, with respect to weight course, especially in the untreated phase

Patient weight and hearth frequency

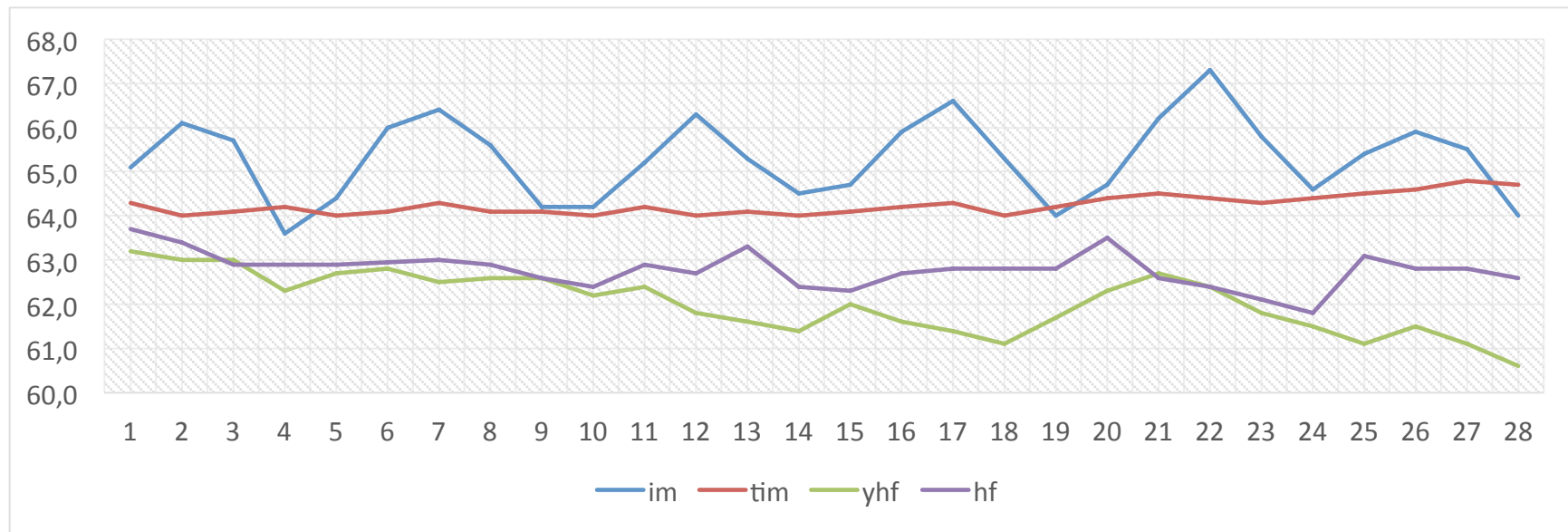
Four weeks are shown before and four more during the first immunoglobulin treatment starting on day 29



The correlation seems to be less strong, probably because hearth rate changes could be less specific to the disease phases

Volunteers and patient weights

The weights of two healthy females living together are synchronously recorded for 28 days and plotted together with the ill series before and during treatment



A period of about five days characterizing with significant amplitude the untreated patient is also weakly perceivable at least in the last weeks for the healthy volunteers

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Lessons learned

Lessons learned: bibliography

- How to find the useful scientific paper
 - Keywords search in “Google Scholar” and other databases
 - Chains of citing and cited papers
 - Suggestions by experts
- How to read a scientific paper:
 - Authors are often more than one reporting the need of often interdisciplinary cooperation
 - Abstract gives a first idea of the topic and the results
 - Introduction roots the paper in the context and provides motivations
 - Methods describe how the problem is approached
 - Figures and Tables illustrate the main results
 - Results present the outcomes reported in figures and Tables
 - A possible discussion deeps the result analysis
 - A possible conclusion highlights important findings
 - Acknowledgements reports contributions other than from the Author(s)
 - References list the relevant bibliography

Lessons learned: writing

- How to write a report
 - Be precise, synthetic and specific
 - Use a standard structure especially caring for: legends describing figures and tables, references citation, acknowledge contribution by other than authors
 - Use the framework of the community
 - When possible, ask for an external review
- How to prepare a presentation
 - Select the salient information
 - Organize
 - Make use of illustrations
 - Use few words to drive comments
 - Care for esthetic

Lessons learned: organization and tools

- Document the whole process
 - Sign in and out every session: be on time
 - Report the topic of every session
- Deal with the host organization
 - Cooperate with coworkers and structure
 - Respect the procedures
- Improve use of office's information tools
- Improve use of technical English
- Improve understanding of biomedical research in a specific case

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Acknowledgements & References

Acknowledgments

- A patient kept anonymous stimulating our work and providing his data as well as two healthy volunteers
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References

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