

COLOR ATLAS OF
**FORENSIC
PATHOLOGY**

MUSCULOSKELETAL SYSTEM

COLOR ATLAS OF FORENSIC PATHOLOGY

Version 1

MUSCULOSKELETAL SYSTEM

ILLUSTRATIVE CASES

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FOREWORD

The greatest pleasure I experience as a teacher, is to see my students excel in their chosen careers and perform even better than myself. The series of e-booklets prepared to better equip medical officers to handle common conditions likely to be encountered in their day to day forensic practice by Professor Dinesh Fernando, is a good example of one of my students doing better than me!

Dinesh is the son of Emeritus Professor of Community Medicine, Former Head, Department of Community Medicine, Former Dean, Faculty of Medicine and Vice Chancellor of the University of Peradeniya, Malcolm Fernando, who was an illustrious medical academic. Following his father's footsteps, he joined the University of Peradeniya in 2003.

Dinesh was one of my post graduate trainees at the Department of Forensic Medicine and Toxicology, Faculty of Medicine, Colombo, and obtained the doctorate in Forensic Medicine in 2003. He underwent post-doctoral training at the Victorian Institute of Forensic Medicine, Melbourne, Australia, with my colleague and contemporary at Guy's Hospital Medical School, University of London, Professor Stephen Cordner. During this period, he served as the honorary forensic pathologist of the Disaster Victim Identification team in Phuket, Thailand following the tsunami, and was awarded an operations medal by the Australian Federal Police.

He has edited, and contributed chapters to, 'Lecture Notes in Forensic Medicine' authored by the former Chief Judicial Medical Officer, Colombo, Dr. L.B.L. de Alwis and contributed to 'Notes on Forensic Medicine and Medical Law' by Dr. Hemamal Jayawardena. He is the editor of the Sri Lanka Journal of Forensic Medicine, Science and Law. Continuing his writing capabilities, he has compiled an important and unique set of e-booklets which will be a great asset to undergraduate and post-graduate students of Forensic Medicine, and also to our colleagues. Its succinct descriptions of complicated medico-legal issues and clear and educational photographs are excellent. It makes it easy for the students to assimilate the theoretical knowledge of each topic as they have been augmented with histories, examination findings, macroscopic and microscopic photographs of actual cases. In some areas, photographs from multiple cases have been included, so that the students can better appreciate the subtle differences that would be encountered in their practice.

I sincerely thank my ever so grateful student Dinesh, for giving me this great honour and privilege to write the foreword.

Professor Ravindra Fernando

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About the authors.....

Dr. Sulochana Wijetunge is a Senior Lecturer serving at the Department of Pathology, Faculty of Medicine, University of Peradeniya and Teaching Hospital, Peradeniya. She obtained her undergraduate education at the Faculty of Medicine, University of Colombo, and her postgraduate training from Postgraduate Institute of Medicine, University of Colombo, Sri Lanka. International exposure includes training at the University of Southern California, USA and Royal Marsden NHS Foundation Trust, UK. She has 17 years of experience in undergraduate teaching and 12 years of experience as a board certified histopathologist and a post graduate trainer. She has an interest in forensic histopathology and trains the forensic medicine postgraduate students in Pathology.

Dr. Dinesh Fernando is a merit Professor in Forensic Medicine at the Faculty of Medicine, University of Peradeniya and honorary Judicial Medical Officer, Teaching Hospital Peradeniya. He obtained his MBBS in 1994 with Second class honours from the North Colombo Medical College, Sri Lanka, and was board certified as a specialist in Forensic Medicine in 2004. He obtained the postgraduate Diploma in Medical Jurisprudence in Pathology from London in 2005, and possesses a certificate of eligibility for specialist registration by the General Medical Council, UK. He underwent post-doctoral training at the Victorian Institute of Forensic Medicine, Melbourne, Australia. He has also worked at the Wellington hospital, New Zealand, as a locum Forensic Pathologist and as an Honorary Clinical Senior Lecturer at the Wellington School of Medicine and Health Sciences, University of Otago, New Zealand. He was invited to visit and share experiences by the Netherlands Forensic Institute in 2019.

PREFACE

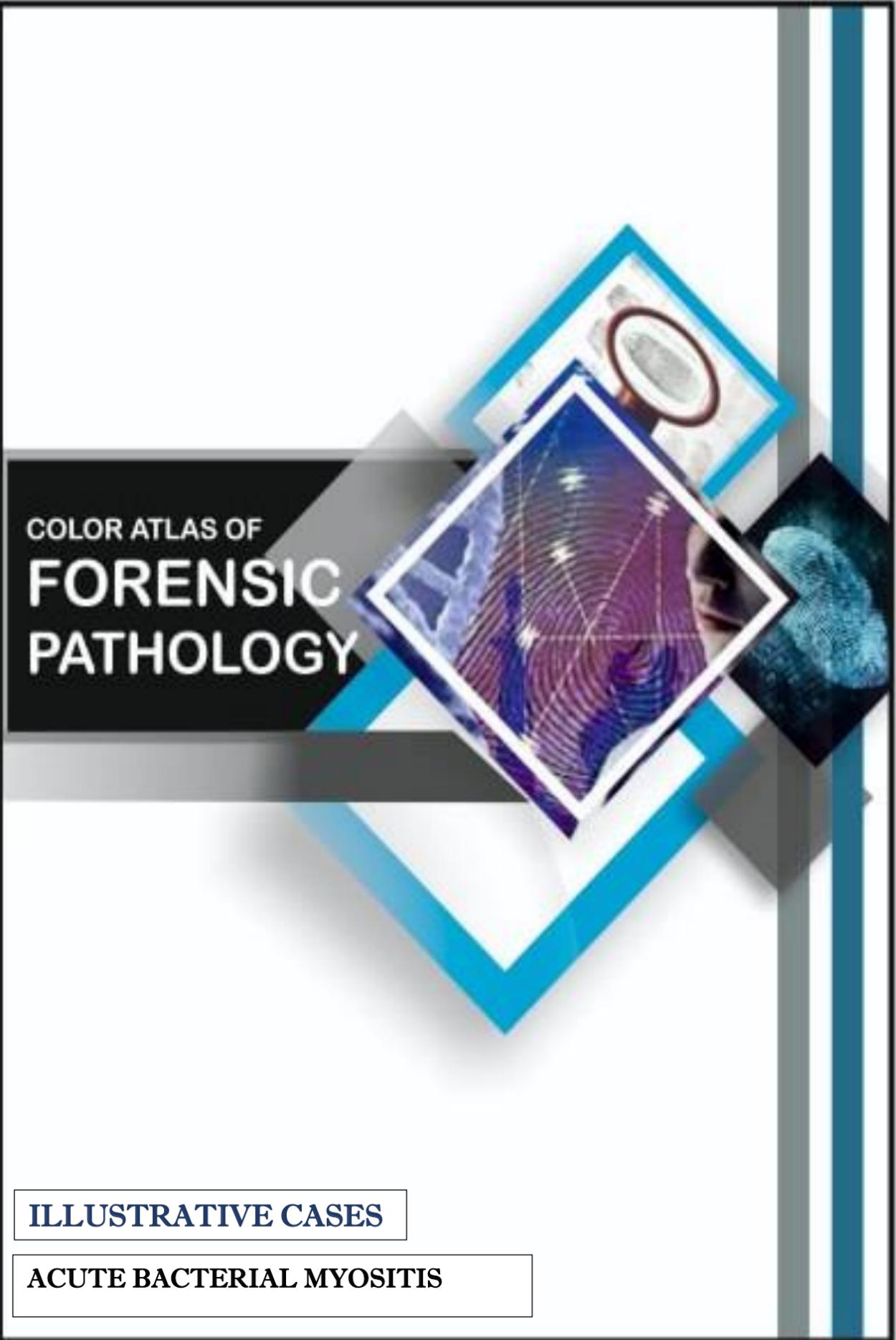
Forensic Medicine in Sri Lanka encompasses, both, examination of patients for medico-legal purposes and conducting autopsies in all unnatural deaths, in addition to those that the cause of death is not known. In the eyes of the justice system in Sri Lanka, all MBBS qualified medical officers are deemed to be competent to conduct, report and give evidence on medico-legal examinations of patients and autopsies conducted by them, as an expert witness. However, during their undergraduate training, they may not get the opportunity to assist, nor observe, a sufficient variety of representative of cases that may be encountered in the future.

Therefore, a series of e-booklets has been prepared to better equip medical officers to handle common conditions that are likely to be encountered in day to day forensic practice. The case histories and macro images are from cases conducted by Prof. Dinesh Fernando, while the microscopic images are from the collections of, either, Prof. Dinesh Fernando or Dr. Sulochana Wijetunge. The selection, photography, reporting of all microscopic images and the short introductions of the pathology of each condition was done by Dr. Sulochana Wijetunge. Most of the macro images used were taken by Louise Goossens – a medical photographer par excellence.

Dr. Madhawa Rajapakshe contributed immensely in preparing the photographs for publication. Ms. Chaya Wickramaratne did a yeomen service in design, lay out and formatting the booklet. If not for the many hours she spent in discussing with the two authors, and editing these cases over several months, these booklets would not have seen the light of day. This is being continued by Ms. Isuruni Thilakarathne.

The content herein may be used for academic purposes with due credit given. Any clarifications, suggestions, comments or corrections are welcome.

Prof. Dinesh Fernando
Dr. Sulochana Wijetunge



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ILLUSTRATIVE CASES

ACUTE BACTERIAL MYOSITIS



ACUTE BACTERIAL MYOSITIS

History

A 65-year-old male was admitted to hospital with a history of a fall 10 days previously. After four days he had developed pain in his left shoulder which subsequently spread to his right shoulder and other large joints. He was treated by his GP with Paracetamol and Prednisone. However, the pain had increased and spread throughout his body and involved large muscles which were acutely tender, especially the quadriceps and the muscles of the forearm. Reduction of power and sensation of both the upper and lower limbs with absent reflexes had been observed. He had also developed a rash over his chest. When he was admitted to the hospital, he was in a semiconscious state and gradually his condition had deteriorated. In the ICU, he was unresponsive to treatment and gradually lost both sensation and movement in his limbs and started to develop rigidity prior to his death. His blood cultures had shown a growth of *Staphylococcus aureus*.

External examination

The upper part of the chest had an erythematous rash overlying the sternum. The skin of the penis and scrotum was very erythematous. Erythematous rashes were present over both forearms, thighs and calves, which were also swollen. Blisters containing reddish fluid was present on the medial aspect of the right thigh measuring 8cm in diameter. Extensive erythema and dark red mottling were present overlying both hips.



Figure 1: Erythematous rash on the upper part of the chest overlying the sternum



Figure 2: Erythematous rashes over thighs and calves

Internal examination

Respiratory Tract: Each pleural cavity contained approximately 250 ml of serosanguineous fluid. The larynx, trachea and mainstem bronchi had congested mucosal surfaces. The right and left lungs weighed 934 grams and 872 grams respectively. Multiple petechial haemorrhages (Tardieu's spots) were present in the posterior aspect and interlobar fissures.

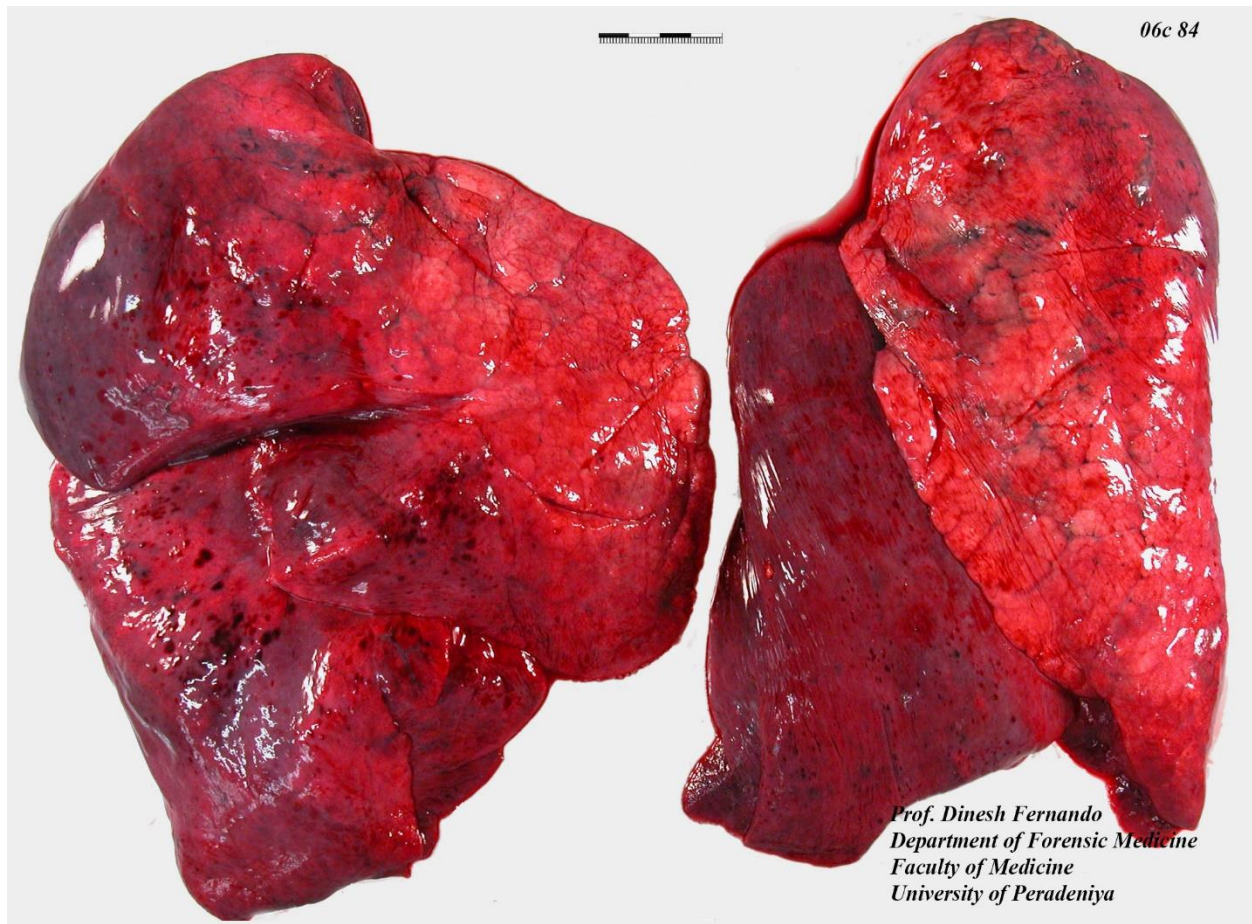


Figure 3: Multiple sub pleural petechial haemorrhages (Tardieu's spots)

Musculoskeletal System: The muscles were soft, red and friable. No localized areas of abscesses were seen.



Microscopic examination – Sections of muscles taken from both thighs, left psoas and left gluteus showed focal acute suppurative myositis

Microbiology – aspirate from both shoulder joints grew *Staphylococcus aureus*

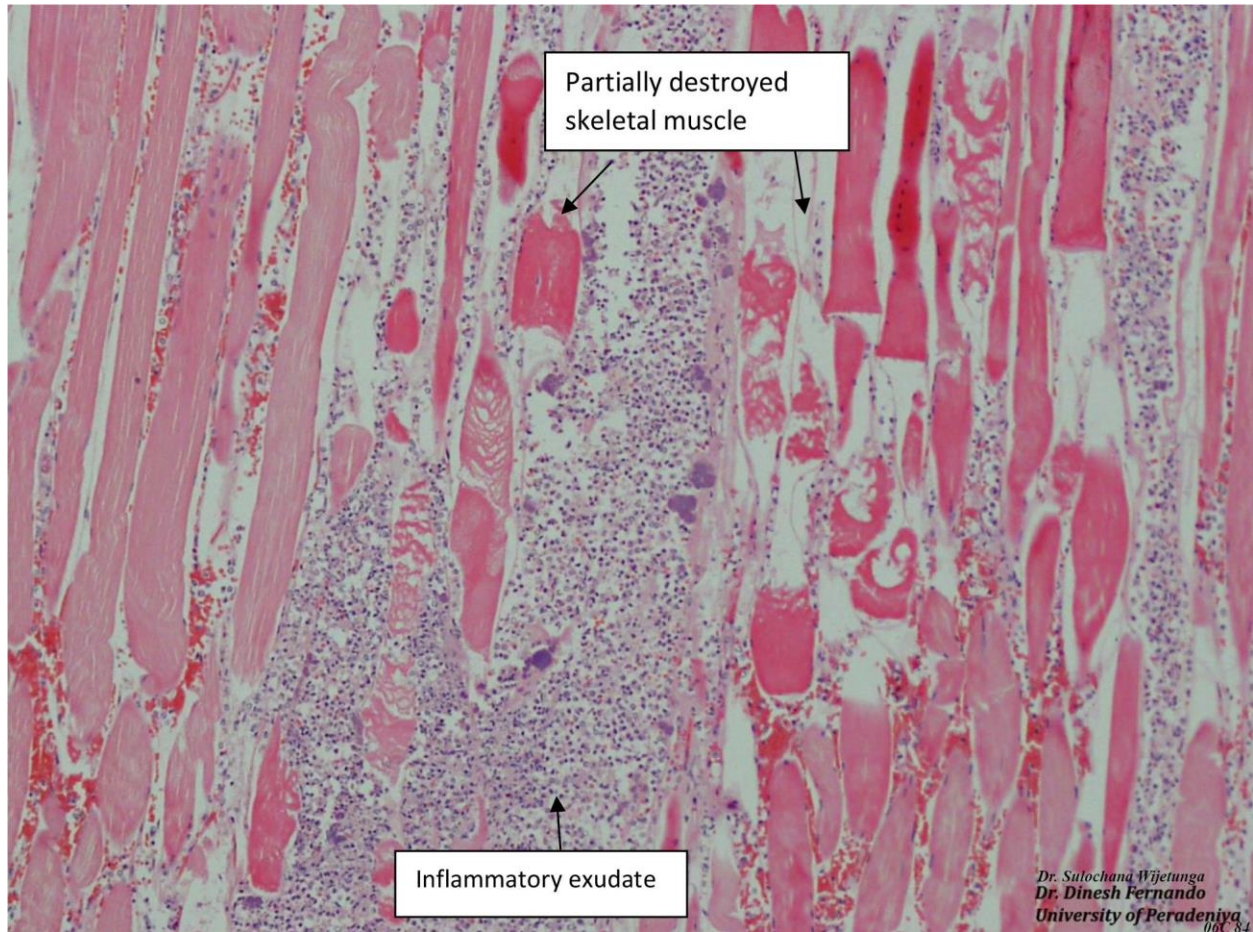


Figure 4: Skeletal muscle fibres infiltrated with an acute inflammatory exudate. The skeletal muscle fibres get destroyed by the inflammatory exudate.

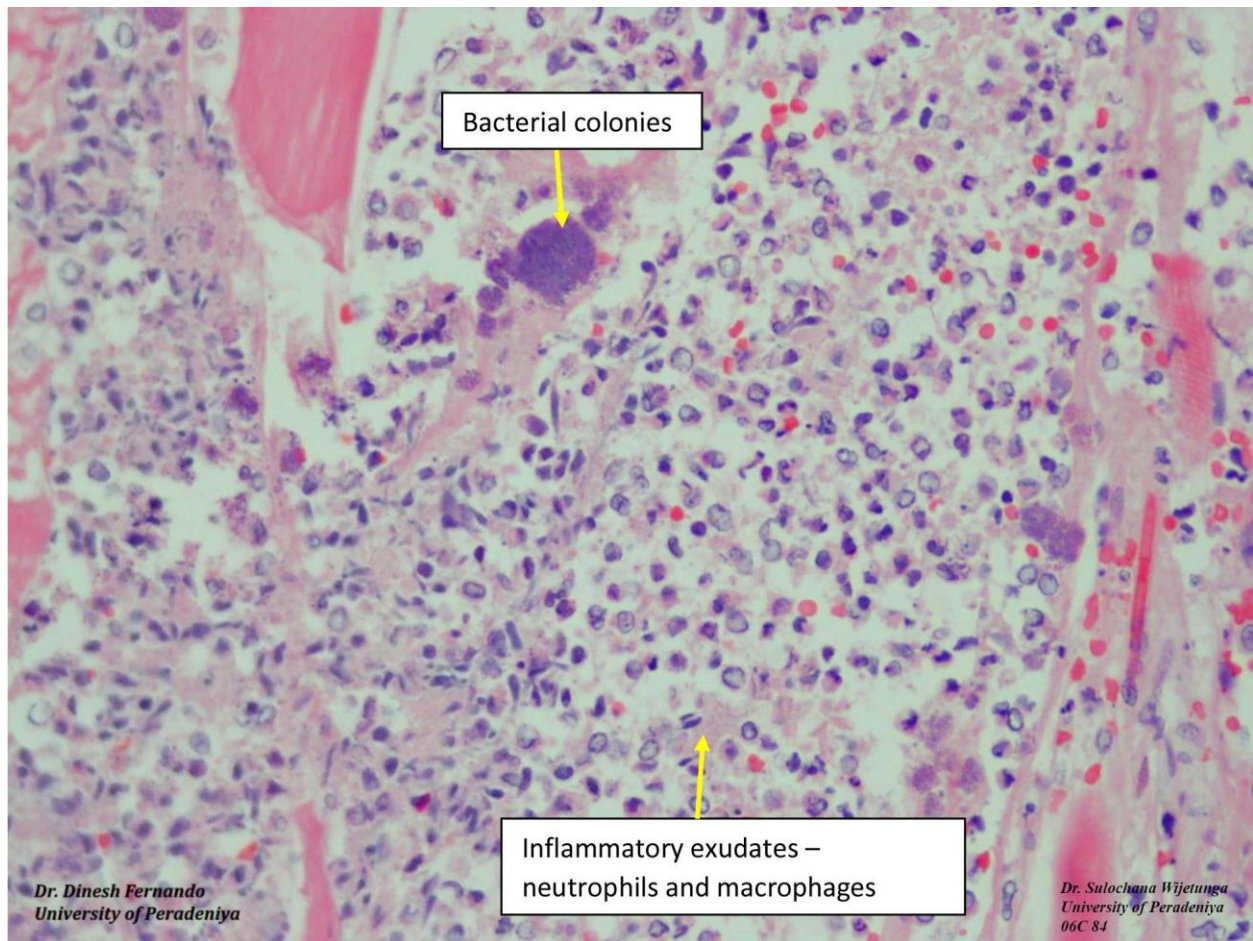


Figure 5: The inflammatory exudate composed of neutrophils and macrophages admixed with bacterial colonies observed under high power

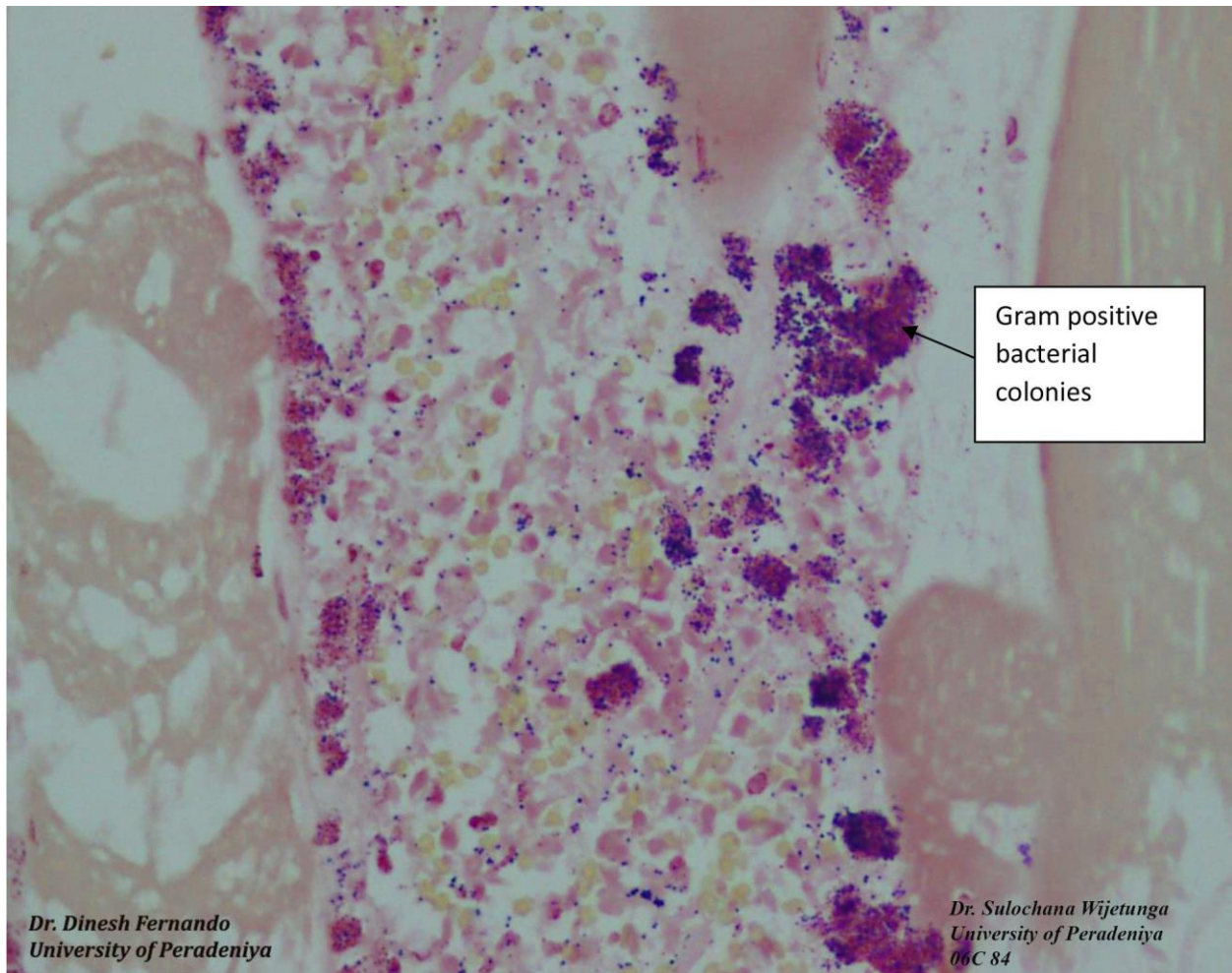


Figure 6: Gram positive cocci bacteria on gram stained sections

Cause of death

Multi organ failure due to staphylococcal septicaemia due to acute bacterial myositis

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