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Telangiectatic Matting is Associated with Hypersensitivity and a Bleeding Tendency

Pooja Kadam [a,b,c], **Jerrick Lim** [a,c], **Ian Paver** [a,c], **David E. Connor** [a,c], **Kurosh Parsi** [a,b,c,*]

[a] Dermatology, Phlebology and Fluid Mechanics Laboratory, St Vincent's Centre for Applied Medical Research, Darlinghurst, Australia
[b] Department of Dermatology, St Vincent's Hospital, Darlinghurst, Australia
[c] Faculty of Medicine, University of New South Wales, Sydney, Australia

WHAT THIS PAPER ADDS

This study may have significant implications for clinical practice. Hypersensitivity was found to be a significant risk factor associated with telangiectatic matting perhaps reflecting that mast cell activation and the associated bleeding tendencies play an aetiological role in the pathogenesis of TM. Further studies with larger cohort sizes are needed to explore the underlying aetio-pathogenesis. It is hoped the findings of this study help tailor preventative measures and treatment modalities to control and reduce the incidence of TM.

Objective: The aim was to investigate the pathogenesis of telangiectatic matting (TM) and identify possible risk factors.

Methods: This study had two parts. The clinical records of consecutive patients were retrospectively analysed to identify risk factors for TM. In the second part, the haemostatic and coagulation profile of the subset of patients with TM were analysed and compared with controls using standard coagulation tests, platelet function and a global assay of coagulation (rotational thromboelastometry, ROTEM).

Results: In 352 consecutive patients presenting to a phlebology practice, 25 patients had TM (7.1%). All 25 patients were female with the median age of 45 (27–57) years. A comprehensive medical history was taken. Among 27 possible risk factors assessed, statistically significant associations included recurrent epistaxis, easy bruising, hypersensitivity (eczema, hives, hay fever, and rhinitis), previous treatment with sclerotherapy or endovenous laser for lower limb veins, and a family history of telangiectasias. Variables not associated with TM included oral contraceptive intake, hormone replacement therapy, and age. The haemostatic and coagulation profile of 12 patients (6 male and 6 female) with TM did not differ significantly from those without TM.

Conclusion: TM is associated with both hypersensitivity and a bleeding tendency. This study revealed no significant increase in the incidence of haemostatic abnormalities in patients with TM compared with the control group. Given the significant association with hypersensitivity disorders, the underlying mast cell hyper-reactivity may contribute to both hypersensitivity and a bleeding tendency and predispose patients to TM.

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INTRODUCTION

Telangiectatic matting (TM) is a morphological description referring to vessels with a small diameter of less than 0.2 mm that can appear sporadically or in well defined patches (hence the term "matting") mostly on lower limbs (Fig. 1). TM may arise spontaneously or following superficial venous procedures including sclerotherapy, surgery, or endovenous laser therapy.[1,2] The incidence of post-sclerotherapy TM is estimated to be between 5% and 35%.[1] TM is considered a major cosmetic complication of sclerotherapy and other superficial venous procedures.

The aetiology of TM is unknown. It occurs more frequently in women but can also occur in men.[3] Various risk factors such as a family history of telangiectasias, obesity, and excessive exogenous female hormones have been implicated.[4] Post-sclerotherapy TM is influenced by treatment techniques, the choice of sclerosing agent, and the sclerosant concentration. However, TM may also occur in the absence of venous disease and in patients with no previous venous interventions.[5,6]

The present study had two parts. First a retrospective analysis of 352 consecutive patients was performed to identify risk factors for TM. Based on these findings, in a

* Corresponding author. Dermatology, Phlebology, Fluid Mechanics Laboratory, St. Vincent's Centre for Applied Medical Research, Level 8, 405 Liverpool St, Darlinghurst, NSW 2010, Australia.
E-mail address: Kurosh.parsi@svha.org.au (Kurosh Parsi).

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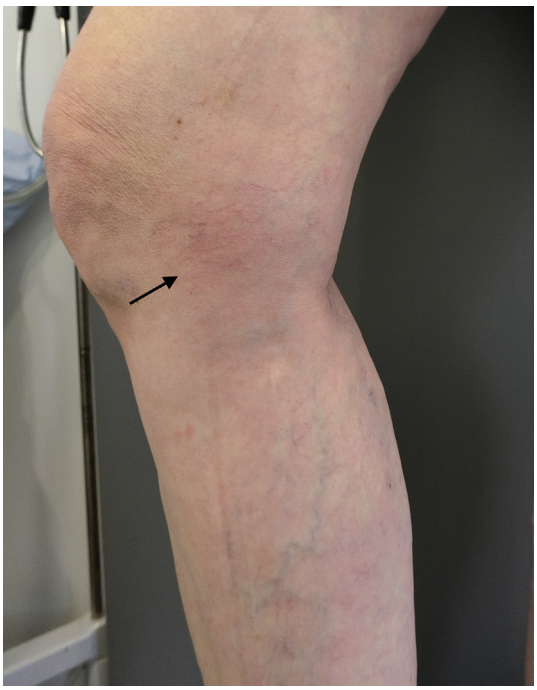

Figure 1. Telangiectatic matting appearing as well defined patches comprising blood vessels less than 0.2 mm in diameter on the medial aspect of the right thigh (black arrow).

subsequent prospective study the haemostatic and coagulation profile of patients with TM was analysed and compared with a control group.

METHODS

Risk factor analysis

Ethics approval. St Vincent's Hospital Research Ethics Committee approved this study (file number 16/186).

Data collection. A total of 352 new patients presented to the phlebology practice between June 2013 and September 2016. Each patient completed a standard questionnaire comprising 36 questions. Completed questionnaires were then reviewed and verified by the chief investigator (K.P.) at the time of consultation. Data for this study were obtained from the completed questionnaires. Patients under 18 years of age were excluded.

Statistical analysis. Data analysis was performed using SPSS software version 22.0. The variables analysed were screened for an association with TM using the chi-square or Fisher exact test as appropriate Continuous characteristics were compared between groups using a Wilcoxon test. A logistic regression model was then run to calculate the odds ratio (OR) and the 95% confidence intervals for potential risk factors showing an association with TM. A backwards stepwise selection was used to derive a multivariate model. All factors showing a significant association with TM at $p < .1$ in univariate analysis were adjusted for, and the variable with the highest p value was sequentially removed until all variables remaining in the model were significant at $p < .05$. The variables that remained significant in this adjusted model are the independent associations (risk factors) with TM.

Assessment of platelet function and coagulation

Ethics approval. St Vincent's Hospital Research Ethics Committee approved this study (HREC Reference Number: HREC/16/SVH/98).

Data collection. All patients were recruited from April to December 2016. Twelve patients with TM and 12 patients without TM (6 male and 6 female) were recruited. A comprehensive medical history was obtained and relevant physical examination was performed. A total of 5 mL of blood was collected from each patient: one citrated tube and one hirudin tube.

The citrated tube was analysed using rotational thromboelastometry (ROTEM). Extrinsically activated thromboelastometry (EXTEM), intrinsically activated thromboelastometry (INTEM), fibrin specific clot formation thromboelastometry (FIBTEM), and aprotinin in thromboelastometry (APTEM) assays were used in ROTEM testing. The EXTEM assay measures the extrinsic coagulation pathway and its interactions with thrombocytes. The INTEM assay measures coagulation through the intrinsic pathway.[7] The FIBTEM assay measures the extrinsic coagulation pathway. It provides information on fibrinogen activity and level of polymerisation by inhibiting thrombocytes. The APTEM assay measures the extrinsic coagulation pathway. Aprotinin, a fibrinolysis inhibitor, is used in conjunction with tissue factor to confirm or exclude hyperfibrinolysis. All four tests were completed simultaneously on four corresponding channels. Various parameters such as clotting time (CT), clot formation time (CFT), maximum clot firmness (MCF), alpha angle, and maximum lysis (ML) were measured.

The hirudin tube was analysed using multiple electrode aggregometry. The following reagents were used: adenosine diphosphate (ADP), adenosine diphosphate high sensitivity with prostaglandin E1 (ADP HS), arachidonic acid (ASPI), collagen and TRAP (thrombin receptor activating peptide). These reagents are agonists that bind to their specific receptors on platelets thereby activating them and causing aggregation.[8]

Statistical analysis. A Microsoft 2010 excel spreadsheet was used to enter data and analysed using SPSS Statistics software. The results from ROTEM and multiple electrode aggregometry between the two groups were compared to identify any single or multiple haemostatic abnormalities. A chi-square test was used to analyse gender. An independent t test was used to assess age. Data from ROTEM and multiple electrode aggregometry were analysed using a Mann—Whitney U test for the TM group.

RESULTS

Risk factor analysis

Of 352 patients analysed, 25 had TM reflecting a prevalence of 7.1%. All 25 patients with TM were females. The median

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