

## **6. Conclusion**

In the present work, PC/DC combination has demonstrated damaging effect on nerves as well as other structures such as skeletal muscles and conveying lipolysis in an intense inflammatory and necrotic pathway. Therefore, its usage in the current form carries a high risk/benefit ratio that can't be overlooked. this study casts even a darker shadow on PC/DC generally as FDA yet to approve it.

The current study is a basic lab research that directs its future counterparts to go and find alternatives for surgery in spinal lipomas and other sites of lipomas as well. As for PC/DC in its current dosage form, it is recommended that it should not have a role especially near vital neural structures in de-bulking of lipomas. Also, it should be encouraged to find a way to split PC from DC via finding a new emulsifier or trying a new delivery system for PC. This can provide a more enlightening approach in addressing the true mechanism of lipolysis of PC and can help in getting rid of the possible detergent effect of DC.

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## المخلص العربي

الأورام الشحمية في العمود الفقري هي أورام حميدة مع ذروة حدوثها ما بين ١٠ و ٤٠ عاماً، ومع ذلك لديها مظاهر عدوانية ترجع إلى تأثير حجمها مؤدية إلى ضغط ثانوي واعتلال نخاعي ينتج عنه ألم تدريجي وعجز لا ارادي وحسي حركي . إن نموها البطيء يمكن تحمله طالما يمكن استيعابها داخل القناة الشوكية لكن عند وصولها للحد الذي لا يوجد بعده حيز لاستيعابها تحدث مظاهر الضغط.

إن العلاج الجراحي للأورام الشحمية في العمود الفقري في الحالات ذات الاعراض تتكون من تخليص الحبل الشوكي مع تخليص حجم الكتلة الشحمية فضلاً عن استئصالها كلية، حيث إن تخليص الحجم أصبح متفقاً عليه من قبل غالبية جراحي الاعصاب حيث إن الاستئصال الكلي يستلزم تقنية أكثر عدوانية ومعالجة. ومع ذلك فإن معدل معاودة ظهورها يصير عالياً بسبب تضخم الخلايا الشحمية المتبقية وهو أقل ما يقال عن العلاج الجراحي حيث تحدث مضاعفات أخرى مثل إصابة النخاع الشوكي وحرمان الحبل الشوكي من امدادات الدم خلال عملية الفصل من الكتلة الشحمية وتسرب السائل النخاعي و القيلة السحائية الكاذبة.

منذ ان افترض بيستور عام ١٩٧٦ أن يحقن العديد من الأدوية في مستويات مختلفة من الجلد يمكن تعظيم آثارها العلاجية موضعياً والتقليل بصورة كبيرة من آثارها العامة أصبح الميزوثيرابي و إذابة الدهون بحقن الفوسفاتيديل كولين والديوكسيكولات مستغلاً في مجالات عديدة. إن الديوكسيكولات هو مستحلب طبيعي وحامض ثانوي من الصفراء ينتج من التمثيل الغذائي عن طريق بكتريا الامعاء لحمض الصفراء الأساسي وهو حامض الكولييك. ومن جهة أخرى فإن مادة الفوسفاتيديل كولين هي من فئة الدهون الفوسفاتية التي تدمج الكولين. انها من العناصر الاساسية في الاغشية البيولوجية ومن الممكن الحصول عليها بسهولة من مجموعة متنوعة من المصادر المتاحة بسهولة مثل صفار البيض أو فول الصويا. الفوسفاتيديل كولين غير قابل للذوبان في الماء، وبالتالي يتطلب مستحلب، وهو الديوكسيكولات لإذابته. تركيبة الفوسفاتيديل كولين ديوكسيكولات تم اجازتها للعلاج بالحقن الوريدي للانسداد الوريدي بالدهون في ألمانيا، والآن تستخدم على نطاق واسع كبديل لشطف الدهون للحد من الدهون تحت الجلد. الشحمية في العمود الفقري تمثل دائما تحدياً جراحياً، وهذا العمل يهدف إلى إعادة توجيه النهج الجراحية إلى أقل تدخل وطريقاً أكثر اماناً وبدا ان الميزوثيرابي بتركيبة الفوسفاتيديل كولين ديوكسيكولات قد يوفر الحل.

في هذا البحث ، خضعت ١٠ إناث جرذان ويستر إلى الحقن اربعة مرات متتالية بمادة الفوسفاتيديل كولين والديوكسيكولات على مدار اربعة ايام متتالية بعدها تم التضحية بالجرذان في اليوم الرابع وتم استئصال ١ سنتيمتر من ضفيرة الفخذ بطريقة دقيقة وتم تكرار الأمر للعشرة جرذان الأخرى لاستخدامهم كمجموعة ضابطة حيث تم حقنهم بمحلول ملحي فسيولوجي. إن العينات المستخلصة من جرذان ٦ من كل مجموعة تم اجراء دراسة بالمجهر الضوئي عليها وكانوا أيضاً موضع التحليل الحصائي النصف كمي لتقييم الالتهاب، ونخر، والتليف وتلف الاعصاب، أما الأربع عينات المتبقية من كل مجموعة فقد تم دراستهم بالمجهر الالكتروني لتقييم العناصر العصبية الدقيقة.

مقارنة بالمجموعة الضابطة التي تم حقنها بالمحلول الملحي فان حقن ٠.١ مللي من مادة لبيوستابيل في اربية أصل الفخذ الأيمن لأربعة مرات متتالية على مدار اربعة ايام وحول عصب الفخذ سببت تكثيف لخلايا الدم البيضاء ومسببة التهاب شديد بالعضلات وترسيب اليف الكولاجين معطياً علامة مبكرة لحدوث تليف. هذه الكرات البيضاء قيدت الحزمة العصبية مما ادى لحدوث ضرر عصبي كبير. وتسبب الالتهاب الشديد بنخر كبير في النسيج الدهني والعضلي. وبدراسة التركيب الدقيق للانسجة العصبية في منطقة الحقن باستخدام المجهر الالكتروني تبين وجود خلايا ليفية داخل الالياف العصبية وانحلال شديد للمايلين. ترافقت الخلايا الليفية داخل العصبية وانحلال المايلين مع ترسب ألياف الكولاجين داخل الاعصاب واعتبارها بذلك علامة مبكرة للتليف العصبي. لقد تأثرت خلايا شوان بالحقن الموضعي لمادة الليبوستابيل ايضاً مسبباً انحلال للمايلين بها. ولم تسلم الاوعية الدموية الداخل عصبية ايضاً حيث ظهر عليها زيادة سماكة جدرانها كما اظهرت المقاطع التهاب بطانة العصب.

بدأ نقاشنا خلال السنوات القليلة السابقة عن سبيل تحلل الدهون بواسطة الفوسفاتيديل كولين و الديوكسيكولات وهل هو عن طريق موت الخلايا المبرمج ام عن طريق النخر. وقد اقترح البحث الحالي و أبحاث أخرى ان العملية المسؤولة عن التحلل الدهني تعدى مجرد موت مبرمج للخلايا. وحتى الآن لا يوجد توضيح لالية عمل الفوسفاتيديل كولين ديوكسيكولات بشكل قاطع. لذلك يؤكد هذا العمل على أن استخدام الفوسفاتيديل كولين و الديوكسيكولات غير آمن لإذابة الدهون و علاج الأورام الشحمية وخاصة القريبة من الهياكل العصبية حيث ان لها تأثيرات شديدة منها انحلال المايلين والالتهاب الشديد وانحلال خلايا شوان غير تأثيرها الضار موضعياً على العضلات والاوعية الدموية ولذلك لا يمكن الاعتماد عليها في تركيبها الحالية فلربما يتم العثور على وسيلة أخرى لحمل الفوسفاتيديل كولين في المستقبل حيث أن معظم الأثر الجانبيّة تعزى إلى الديوكسيكولات.